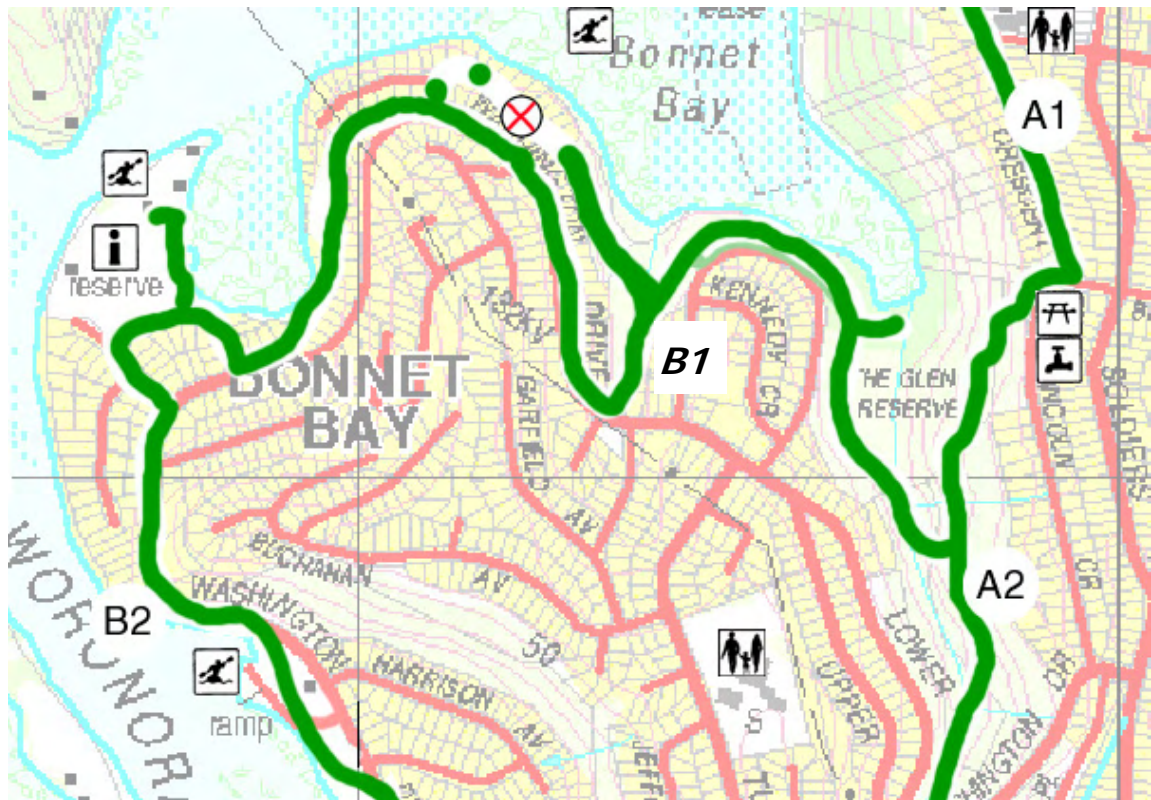


W1-B1 Koolangarra



Rationale:

Sections B1 and B2 offer a grade 2-3 alternative route to walkers with reduced mobility, avoiding the 100m long steep gully section (Grade 4), section W1-A4 in Burnum Burnum Sanctuary.

Although over 50% of the route is on streets, it follows an alignment close to the river frontage with panoramic views of the scenic lower river estuary.

To avoid a further 600m walk along Washington Drive, a link between Koolangarra Reserve and Arthur Street is necessary. A route is feasible – currently a 100m long narrow Council owned finger of land connects the two, but no formal track exists. It is suggested that detailed consultation between local residents, Bushcare groups and the Council is carried out to ascertain whether or not this link is desirable.

The link represents an opportunity for a joint project between Koolangarra, Arthur Place and Nixon Place Bushcare groups and interested local residents. A defined track would facilitate further noxious weed removal and bush regeneration.

A level, 700m part, of subsection B2, from Bonnet Bay Boat Ramp to Jannali Reserve Boat Ramp, represents one of only a limited number of opportunities in the Woronora Valley, to provide an Australian Standard Class 1 facility for those with reduced mobility, such as wheelchair users, to experience the River. At 2.5 metres wide to allow ample room for two wheelchairs to pass with vantage point decks, and interpretive information on the natural environment.

As a contribution to equity of access, the multi-access way and proposed Sutherland Shire Canoe Centre at Bonnet Bay Boat Ramp, will considerably improve land and water based recreation opportunities for less mobile groups.

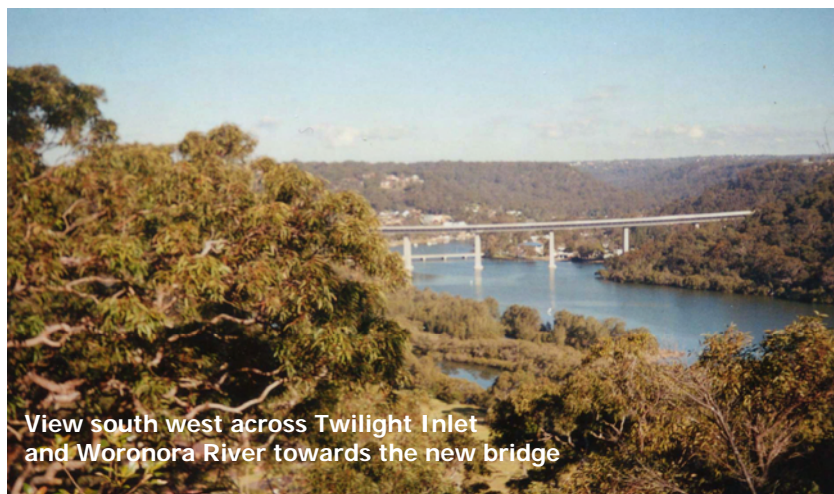
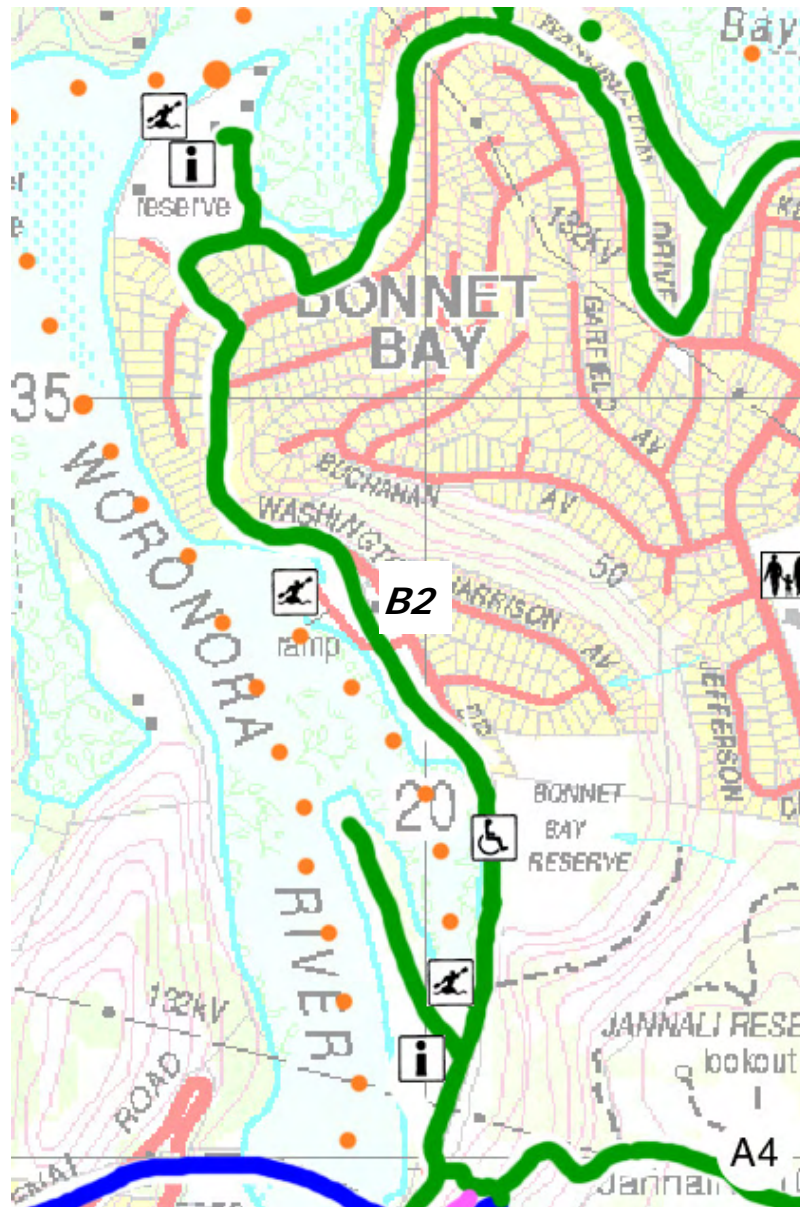


WORONORA WAY
THE GLEN

ALTERNATIVE
PEDESTRIAN ROUTE

Sub section	Koolangarra	W1 – B1	
Start and Finish	The Glen Res. Fire Trail to Lakewood City Res., Bonnet Bay.		
Distance	2 km		
Grade	2-3	Time	1.5 hrs
Main Features	<ul style="list-style-type: none"> ● The Glen Bushland Reserve ● Koolangarra Bushland Reserve ● Lakewood City Reserve ● Boardwalk to Sydney Coastal Riverflat Forest ● The “Bonnet” and Mangroves 		
Description	55% on well-defined walking tracks, 40% on streets, 5% no track. SSC walk track symbol marks start from FT to bridge over Skinners Creek; rock ledges to section of timber walkway (optional). Timber steps ascend to Van Buren Circuit, on-street section, then into Koolangarra Res. to creek crossing; track becomes indefinite. Arthur St exit is overgrown and steep. Join lower Washington Dr., Coolridge Cres. to Lakewood City Res.		
Facilities	<ul style="list-style-type: none"> ▪ Lakewood City Res. – toilets, carpark, BBQ, picnic, play, oval ▪ Bonnet Bay Shopping Centre (short detour) ▪ SSC Glen Bushland Reserve Map and Sign board 		
Opportunities and Constraints	<ul style="list-style-type: none"> ● Missing link from Koolangarra Reserve to Arthur Street. Approx. 100m plus a short set of steps – potential venture between Koolangarra and Arthur Place Bushcare groups. ● Showcase efforts of the Glen, Koolangarra and Arthur Place Bushcare Groups to restore bushland and foreshore, control noxious weeds, and facilitate indigenous seed collection. ● Interpret importance of SSC's Greenweb – protecting endangered ecological communities such as SCRFF. ● Fine prone area ● Storm water management issues below Van Buren Circuit. Potential to seek small SSCMB grant 		
Current Status	Council owned, zoned Environmental Protection Bushland 7(b)		
Actions Required	<ul style="list-style-type: none"> ● Detailed consultation with Bushcare groups ● Consult residents regarding Arthur Street link ● Construct steps from Arthur St to Koolangarra Reserve. ● 1 x display shelter for Lakewood City Reserve (sign type 1) ● 6 x marker posts (sign type 4) ● Seek SSCMB stormwater control grants 		
Priority Level	B		
Estimated Cost	10K		
Stakeholders Community	Koolangarra Res., Glen Res., Arthur PI and Nixon PI. Bushcare Groups, Bonnet Bay PS, Bonnet Bay Shopping Centre, Sports clubs		
Agency/Managers	SSC, SSCMB, Sydney Water, Riverkeeper, DIPNR		

W1-B2 Bonnet Bay Foreshore



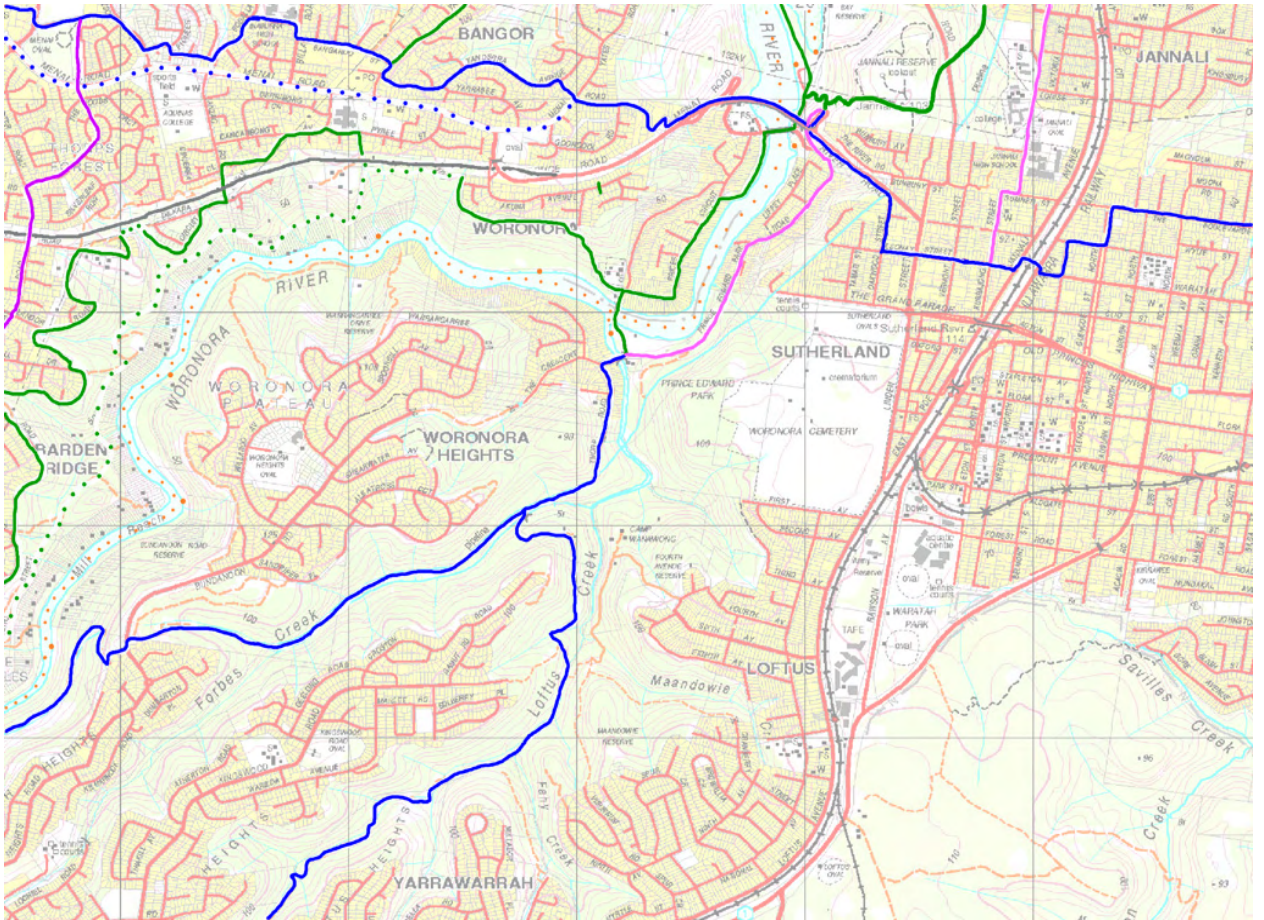
View south west across Twilight Inlet and Woronora River towards the new bridge

WORONORA WAY
THE GLEN

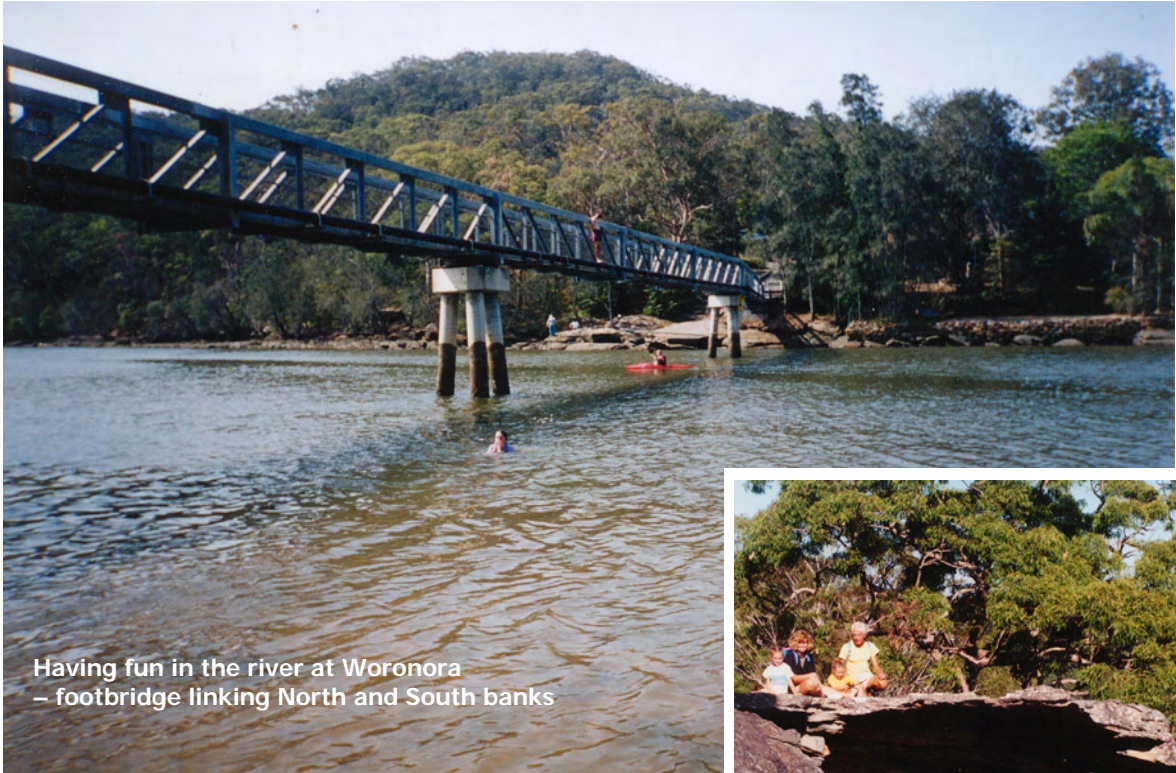
ALTERNATIVE
PEDESTRIAN ROUTE

Sub section	Bonnet Bay Foreshore	W1 – B2	
Start and Finish	Lakewood City Reserve to Jannali Foreshore Reserve Boat Ramp		
Distance	1.3 km		
Grade	1-2	Time	45 min
Main Features	<ul style="list-style-type: none"> ● Bonnet Bay Reserve ● Twilight Inlet ● Jannali Foreshore Reserve ● Constructed Wetland ● Burnum Burnum Sanctuary 		
Description	<p>Entirely on streets, foreshore access roads. Exit Lakewood City Reserve via Wilson Place, head south on Washington Drive via 50m incline. Descend to Bonnet Bay Boat Ramp and level continuous recreation reserve for 0.75km.</p>		
Facilities	Picnic shelters, bbq, carpark x 2, toilets x 2, play area, tables, canoeing centre, boat ramp x 2, oval.		
Opportunities and Constraints	<ul style="list-style-type: none"> ● Formalise south facing lookout to new and old Woronora Bridges at side of Washington Drive, construction of a safety balustrade and platform. ● AS Class 1 facility along level foreshore for 700m separate to existing access road. ● Key route along foreshore linking recreation, sporting and leisure facilities. ● Integrated land and water access for wheelchair users via proposed Sutherland Canoe Centre at Bonnet Bay Boat Ramp. 		
Current Status	Council owned, zoned Environmental Protection Bushland 7(b)		
Actions Required	<ul style="list-style-type: none"> ● Liaise NSW Sports Council for the Disabled, SSC and local groups to plan wheelchair accessible facilities. ● Construct 700m long x 2.5 m wide path ● 1 x sign type 1 (Jannali Foreshore Park) ● 1 x sign type 2 (Bonnet Bay Reserve) ● 4 x marker posts 		
Priority Level	B		
Estimated Cost	100K		
Stakeholders Community	Jannali Res. (Boat Ramp), Jannali Res. (Tyler Place) and Jannali Reserve Bushcare Groups, Jannali High School, Sports Clubs, Billies Bushies, Woronora Bushfire Brigade, Sutherland Shire Canoe Club, Caravan Park, Kurunulla Aboriginal Corporation.		
Agency/Managers	SSC, SSCMB, DIPNR, Riverkeeper, Gandangara LALC		

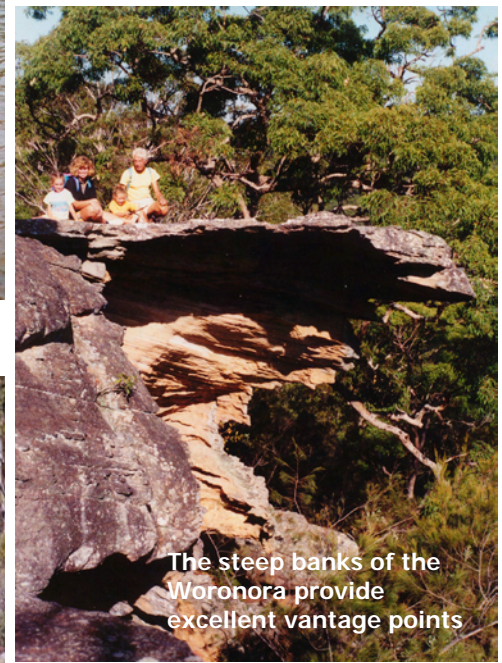
W2 – Woolloonara



View of Woronora Village from
Prince Edward Park Lookout



Having fun in the river at Woronora
– footbridge linking North and South banks

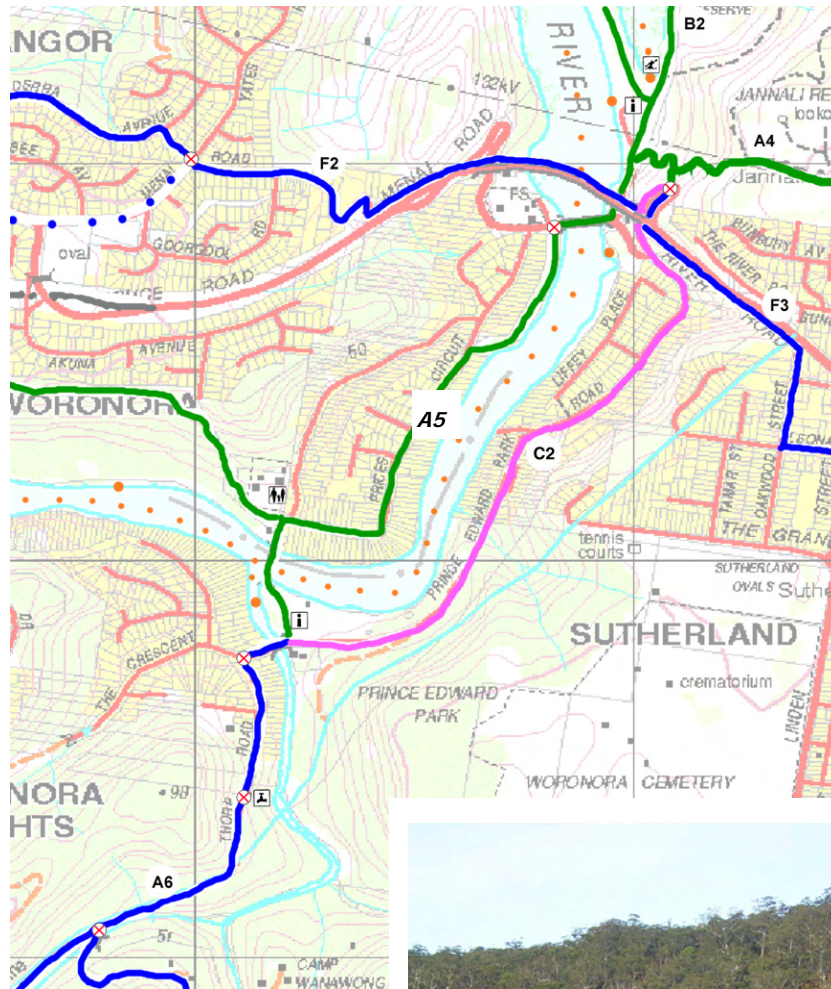


The steep banks of the
Woronora provide
excellent vantage points



Forbes Creek

W2-A5 Woronora Village



Prince Edward Park and Woronora River

Rationale:

This route keeps to the low-lying foreshore through Jannali Reserve to Prices Reserve and Prince Edward Park. The heart of the Woronora valley and the section most people associate with the river. It is where the river changes character from a narrow twisting valley to a more open channel.

It offers an opportunity for close interaction with the river itself with two river crossings. Potential for development of wheelchair accessible route for two kms from Prices Reserve to north end of Bonnet Bay Reserve

Between the Old Bridge and Prince Edward Park there are two alternative routes along either bank of the river. Both banks of the river have pinch points obstructing the route where properties sit adjacent to the high tide mark, often with private jetties. As a result, 0.7km of each route option is on street pavements.

WORONORA WAY
WOOLOONARA

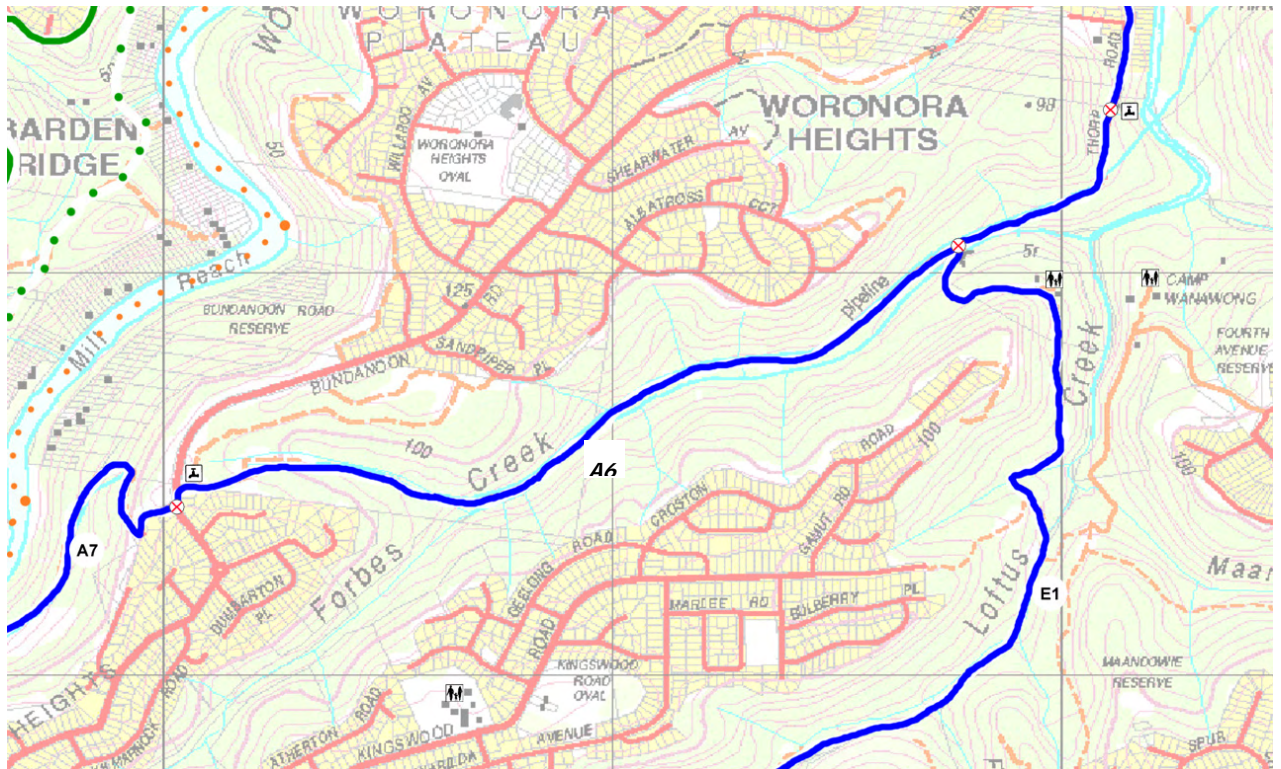
PEDESTRIAN ROUTE

Sub section	Woronora Village	W2-A5
Start and Finish	Jannali Reserve Boat Ramp to end Thorp Road	
Distance	1.8 km	
Grade	2	Time 1 hr
Main Features	<ul style="list-style-type: none"> • New and old bridge • Prices Reserve • Footbridge • Prince Edward Park • Forbes Creek 	
Description	65% on quiet streets in the heart of the Woronora Valley, 35% through foreshore reserves, two river crossings. From Jannali Boat Ramp via access road to Prince Edward Park Road and across old bridge. South into Prices Reserve. Via Prices Circuit to Woronora Public School. Descend to cross river via footbridge through PEP to RSC across Forbes Creek and turn into Thorp Road. Ascend to end of road.	
Facilities	Caravan Park, Cafes, Restaurant, Beaches, Boatshed, Lifesaving Club, RSL, Boat Ramps, Football Oval, Toilets, Shop, Bbq, picnic, 2 x play areas	
Opportunities and Constraints	<ul style="list-style-type: none"> • Attractive Riverside Environment – added reason to upgrade PEP foreshore retaining wall • Increased visitors will benefit local businesses • Very narrow footbridge • 2 Main Street Crossings 	
Current Status	Foreshore Reserve owned by SSC Prince Edward Park is Crown Land managed by SSC, zoned 6(a)	
Actions Required	<ul style="list-style-type: none"> • Better segregation of cyclists and walkers • 1 x Display Shelter in PEP (type 1) • 5 x Waymarking Signs (type 4) 	
Priority	A	
Estimated Cost	10K	
Community	Billies Bushies, Sutherland Shire Bushwalking Club, NPA, BBaCA, Precinct Residents Association, Volunteer Bushfire Brigade, Public School, Lifesaving Club, RSL, Caravan Park, Star Boatshed, Forbes Creek, The Crescent, and Prince Edward Park Bushcare Groups, Scouts and Guides, Church Groups	
Land owners/ Managers	SSC, DIPNR, Sydney Water, SSCMB, Gandangara LALC	

The factors influencing the choice of the west bank of the river are:

- The facilities which include visitor accommodation at the caravan park, a restaurant, café, toilets and car park.
- Prices Circuit has less traffic than Prince Edward Park Road.
- It is a more even route with no steep gradients - graded 2.
- It uses the footbridge, from where the changing river character can be viewed.
- It connects Woronora Public School.

W2-A6 Forbes Creek



Rationale:

The benefits of this route (W2-A5 and W3-A6) are:

- It is an existing well-maintained management trail
- It offers a surface, (mainly decomposed granite), and width (4 to 5 metres in places) suitable for shared use by walkers and cyclists
- It offers an opportunity for Sydney Water Corporation and its predecessors to "give back" to the community, having damaged sensitive habitats and plant communities in originally constructing pipeline and sewer infrastructure, throughout the catchment.



Jogger heading southwest from Thorp Road along the Pipeline Track towards Bundanoon Road

WORONORA WAY
WOOLOONARA

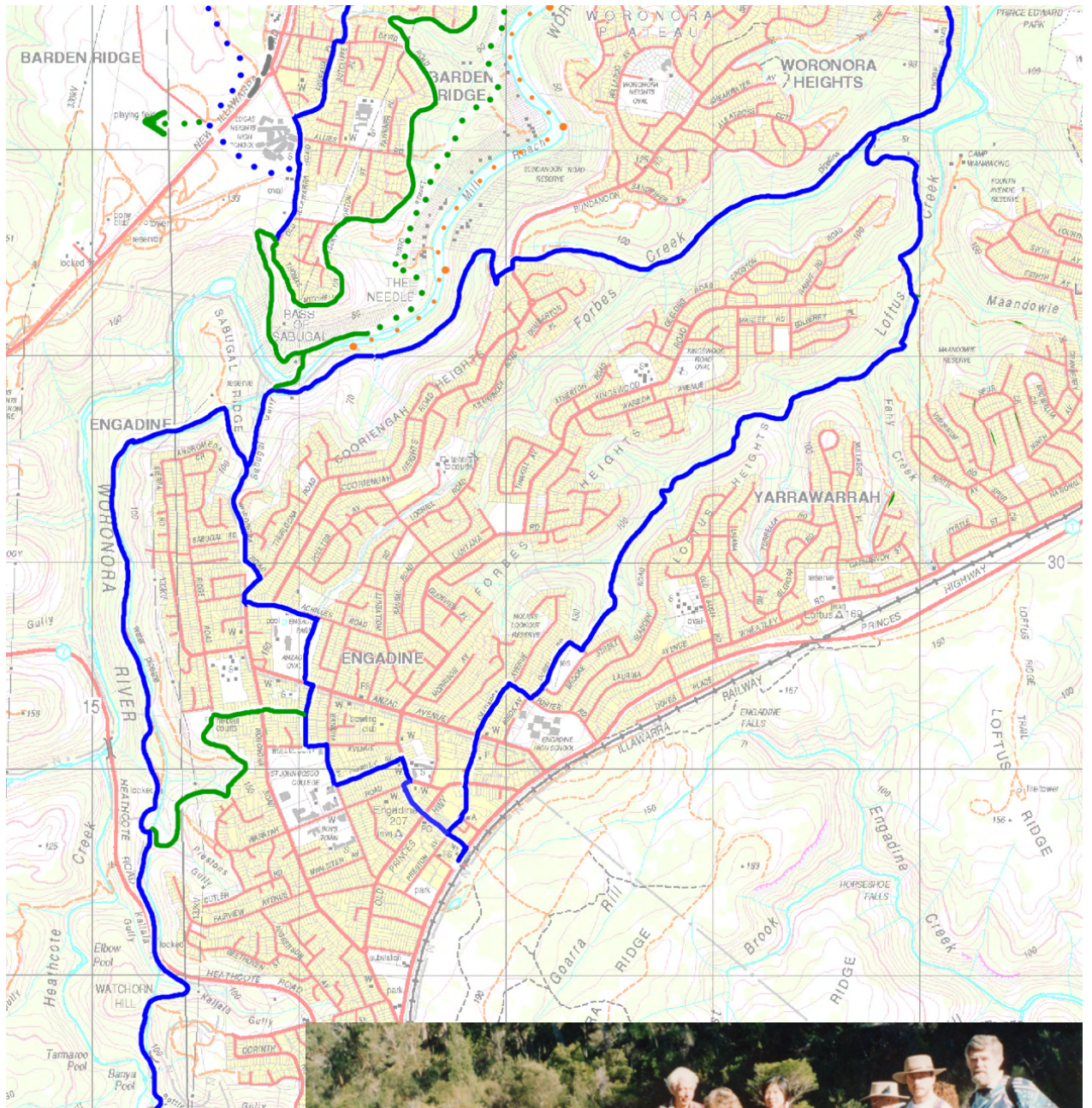
PEDESTRIAN ROUTE

Sub section	Forbes Creek	W2-A6	
Start and Finish	Thorp Road ACP to Bundanoon Road		
Distance	2.4 km		
Grade	2	Time	1.5 hr Ped, 0.5hr Cycle
Main Features	Waterfall Sydney Sandstone Gully Forest Woronora Dam pipeline		
Description	Well maintained, decomposed granite surface maintenance track, 4-5 metres wide alongside water supply pipeline.		
Facilities	None		
Opportunities and Constraints	<ul style="list-style-type: none"> ● Major access link to Loftus and Forbes Creek track network. ● Sydney Water Pipeline Maintenance Track ● Interpretation of Journey of Drinking Water ● Where creeklines cross replace concrete culverts with natural materials/plants – Education Opportunity 		
Current Status	Sydney Water Board Easement - no official access, used informally by local population for passive recreation activities. Mix of Crown Land (SSC managed) zoned 7(a) and Sydney Water Board land zoned for special uses.		
Actions Required	<ul style="list-style-type: none"> ● Formalise agreement with Sydney Water to allow use of Pipeline Track for walking and cycling ● Upgrading of ACPs at both ends ● Repair motorcycle barriers ● Construct Kissing Gate or similar structure to allow pushbikes ● 2 x Information and Safety Sign at Thorp Road ACP ● 4 Waymarker Posts 		
Priority	B		
Estimated Cost	10K		
Community	Camp Wonawong, Guides Camp, Woronora Valley Precinct Residents Association, Forbes Creek Bushcare group		
Land owners/	SSC, DIPNR, Sydney Water, Gandangara LALC		

Sydney Water's current annual budget for maintaining the Pipeline Road from Thorp Lane to the Woronora Dam is approximately \$130,000. Works include routine road surface upgrades; installation of safety measures, gates and lock repairs; signage and grounds maintenance.

Consultations with Sydney Water officers indicate that they are likely to seek financial contributions from Sutherland Shire Council and DIPNR to assist with access control infrastructure such as signs and gates and maintenance arising from routing the Great Kai'mia Way along the Pipeline Road.

W3 – Sabugal



Bushwalkers beside a freshwater pool in the Woronora between Heathcote Road and Sabugal Causeway

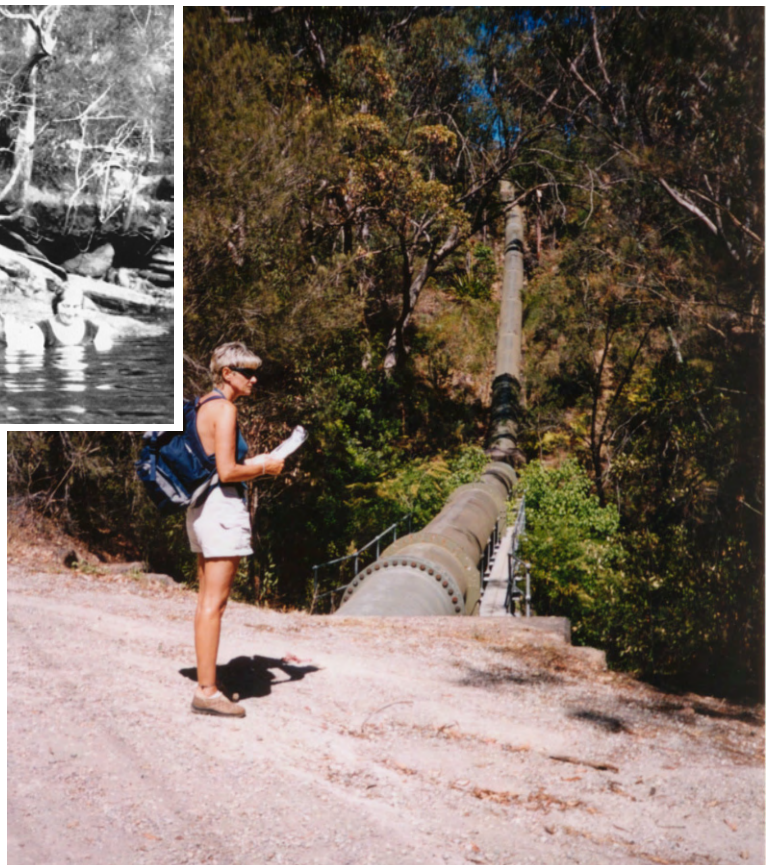




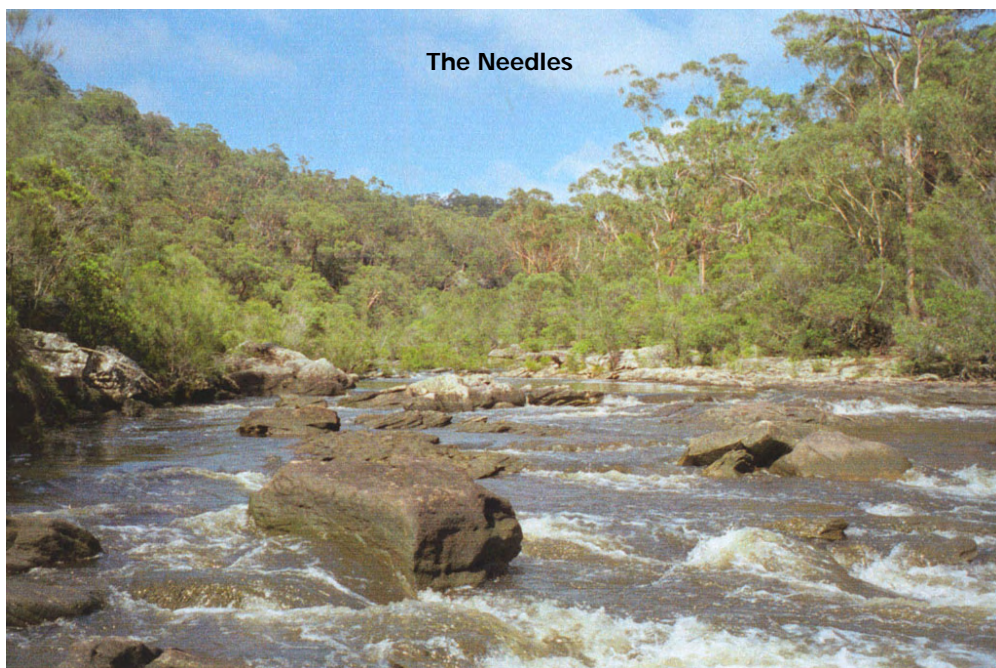
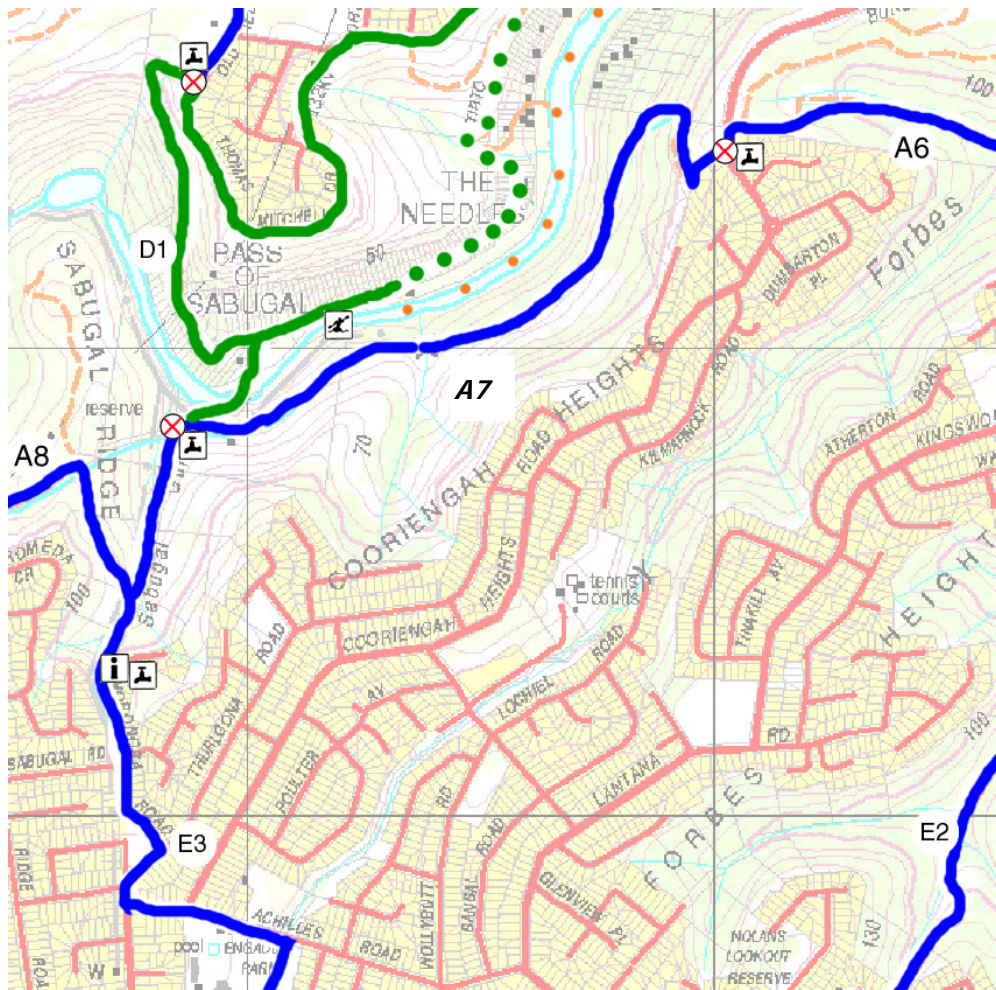
Top – Freshwater pool above Sabugal causeway. Lucas Heights Escarpment in the background.

Right – Sabugal Gully – signage and barriers required to direct users away from pipeline

Above – Family Swimming at the needles (c.1920)



W3-A7 Needles View



The Needles

WORONORA WAY
SABUGAL

SHARED USE ROUTE

Sub section	Needles View	W3-A7	
Start and Finish	Bundanoon Road, Engadine to Sabugal Gully (northern end of Woronora Road, Engadine)		
Distance	1.5 km		
Grade	2-3	Time	1 hr Ped. 0.5 hr Cycle
Main Features	<ul style="list-style-type: none"> • Dramatic river views • The Needles (short detour) • Sabugal Causeway (shorts detours) 		
Description	Via steep Kelton Place cul de sac to join undulating Pipeline Rd which narrows to 3 metres across creek bridges.		
Facilities	None		
Opportunities and Constraints	<ul style="list-style-type: none"> • Interpretation of Journey of Drinking Water • Where creeklines cross replace concrete culverts with natural materials/plants – Education Opportunity • Create lookout/rest point • Secluded location attracts antisocial behaviour eg car burning • Bushfire Prone Area 		
Current Status	Sydney Water Board Easement - no official access Crown Land managed by SSC, zoned 7(b)		
Actions Required	<ul style="list-style-type: none"> • Formalise agreement with Sydney Water Board • Move ACP at Bundanoon end closer to residential area • Construct kissing gate to allow bicycle access • Information Sign and Safety Signs at either end • 3 Waymarking Signs • Seat and Look out 		
Priority	B		
Estimated Cost	15K		
Community	Bundanoon Road Bushcare Group, WVPRA Volunteer Bushfire Brigade.		
Land owners/ Managers	SSC, DIPNR, Sydney Water, Gandangara LALC, NPA		

Rationale:

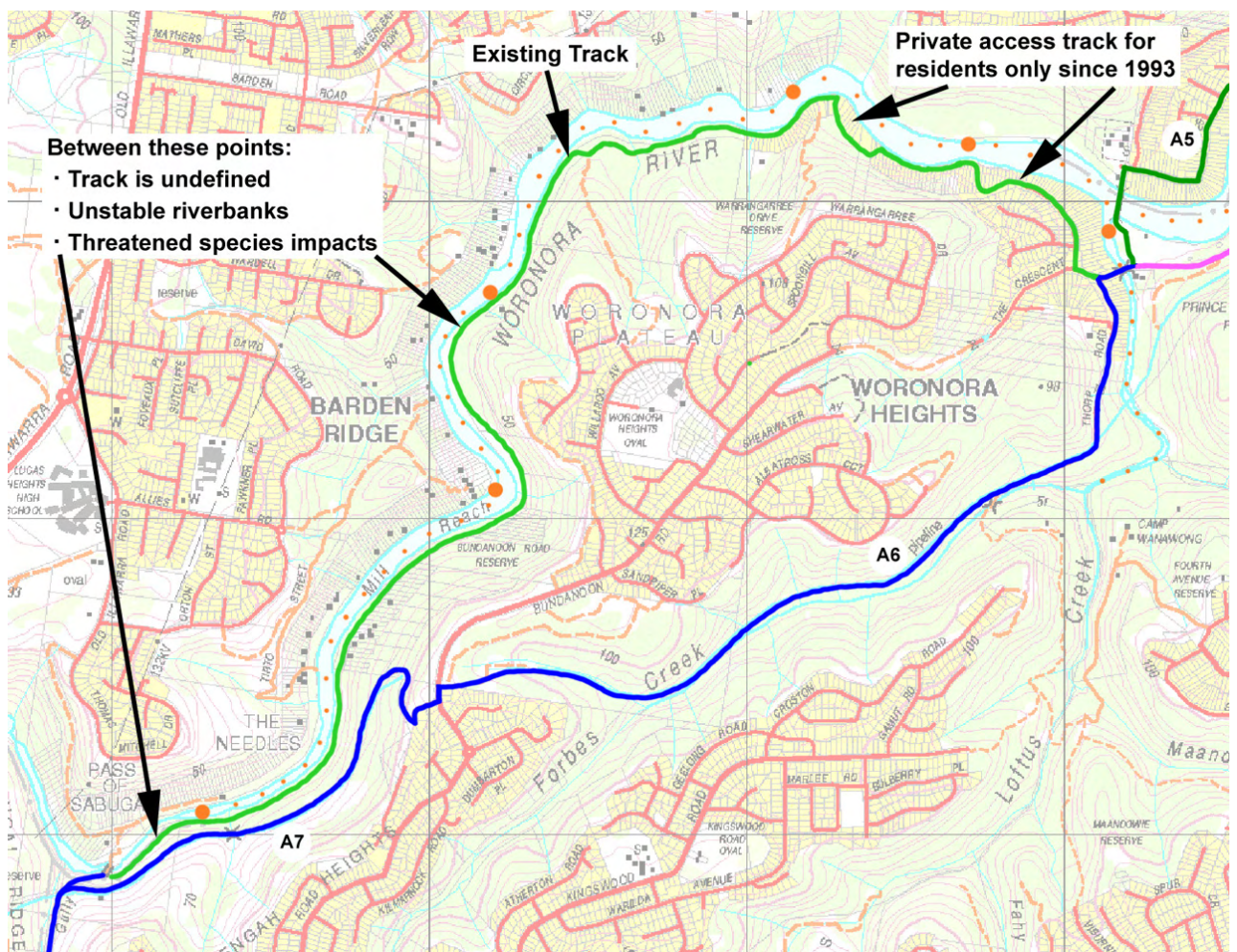
- This route offers a linear focal point for community environmental projects to tackle weed infestation and poor water quality in the creeks which cross the track, providing an opportunity to build on work carried out by Forbes Creek Woronora and Bundanoon Road Bushcare Groups.
- It has the potential to be an educational asset explaining aspects of water supply, storm-water management, creek restoration.
- The track is currently used informally by bush walkers, runners, joggers, and cyclists as a direct route to access the Needles area and its opportunities for primary contact recreation on the river.
- Consultations with the Woronora Valley Precinct Residents Association and local residents indicate that the Pipeline Trail would be a preferred route to access the Needles and Sabugal Causeway. They expressed concerns that a through route along the rivers edge (see below) would be fraught with legal problems, expensive to construct, and have adverse impacts on native flora and fauna.

Alternative Route Investigated

Southern River Bank

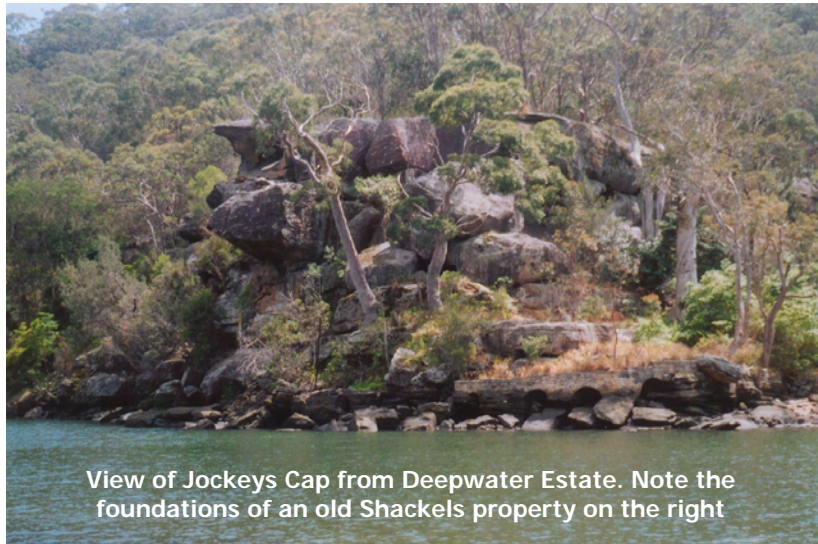
From Prince Edward Park to The Needles via the rivers edge - approx. 5km The route is problematical and there are several issues and constraints:

- At present the 1km footway through the Deepwater Estate is a... "private road - for residents only". This is a relatively recent designation, brought in by the Council in 1993, in response to lobbying by some but not all residents. For over a century prior to 1993, the route was a way of accessing the upper river from Woronora settlement.
- There are no problems with the route from Deepwater to the abandoned Sunshine Sunday School camp ground. 1.2km of fire trail and bush track often used by fishermen, crosses Crown land zoned for public recreation by Council.
- Upstream of here, for 2.5km to the Sabugal Causeway, the natural river banks are unstable and the track has been washed away over time by the river. To construct a new track to last would involve major bank stabilisation works such as a gabion type structure to protect the path from erosion. This would impact severely on riverbank vegetation and could cause erosion to accelerate on the opposite bank of the river. Works on the site are likely to add significantly to siltation of the river. As the track is not a through route due to the denial of access through Deepwater, its benefits are reduced and the likely cost of \$1million might be better spent on more sustainable sections of the Woronora Way.





Deepwater Estate properties on southern foreshore are linked by a private access-track



View of Jockeys Cap from Deepwater Estate. Note the foundations of an old Shackels property on the right



View of the southern river bank close to Mill Reach

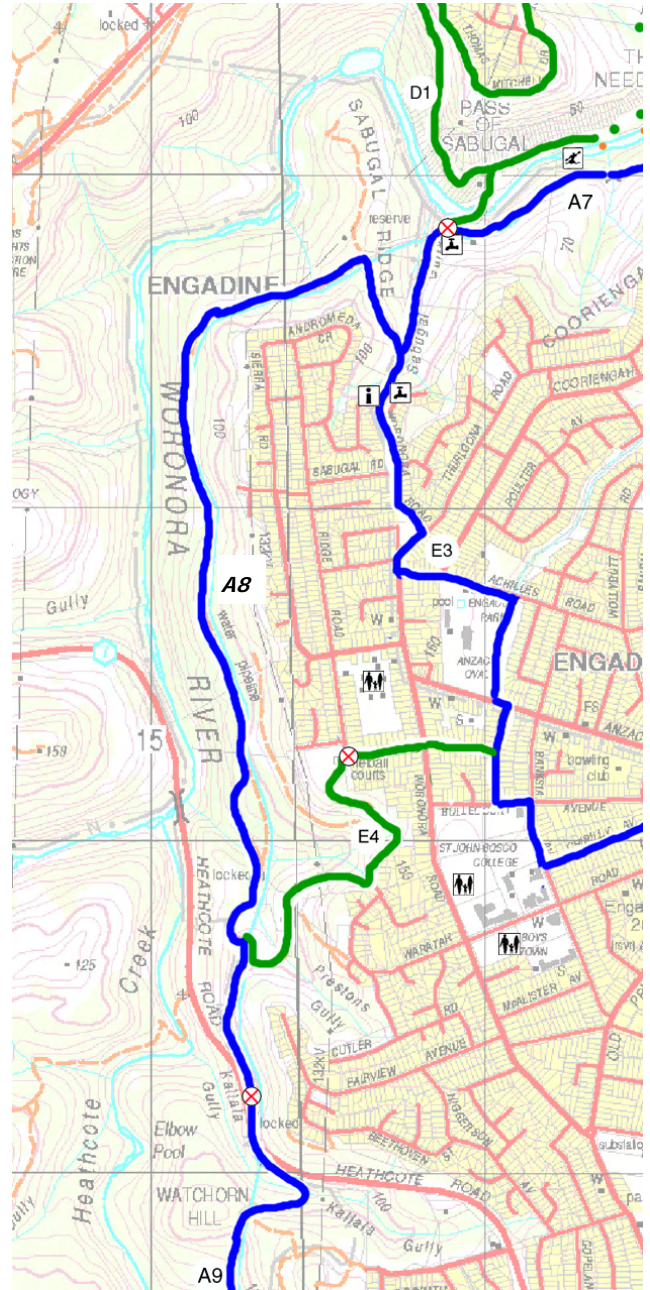
W3-A8 Scouters View



Woronora River from Ferntree Reserve

Rationale:

- The Sydney Water Pipeline Trail offers views of the river and acts as a "spine" linking 3 bushtracks which head down the slope to access the river.
- The steep rocky terrain beside the river makes access on foot extremely slow, difficult, and unsafe. A purpose built track in this location to Australian Standard would be expensive because of the difficult access, terrain and the need for steps and boardwalk construction. It would involve the removal of vegetation important for the protection of the river from urban run off, and create a source of siltation.
- The pipeline trail represents a far more sustainable option, and still provides points of access to the river for more adventurous recreational pursuits.
- The steep slopes above the pipeline collect run off from Engadine, bringing pollutants and weeds into the river. There is an opportunity for a project to be set up in partnership with Sydney Water and local community groups to intercept the runoff alongside the pipeline in the gullies and creeks.



WORONORA WAY
SABUGAL

PEDESTRIAN ROUTE

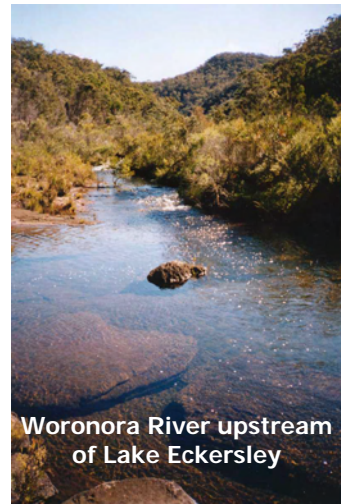
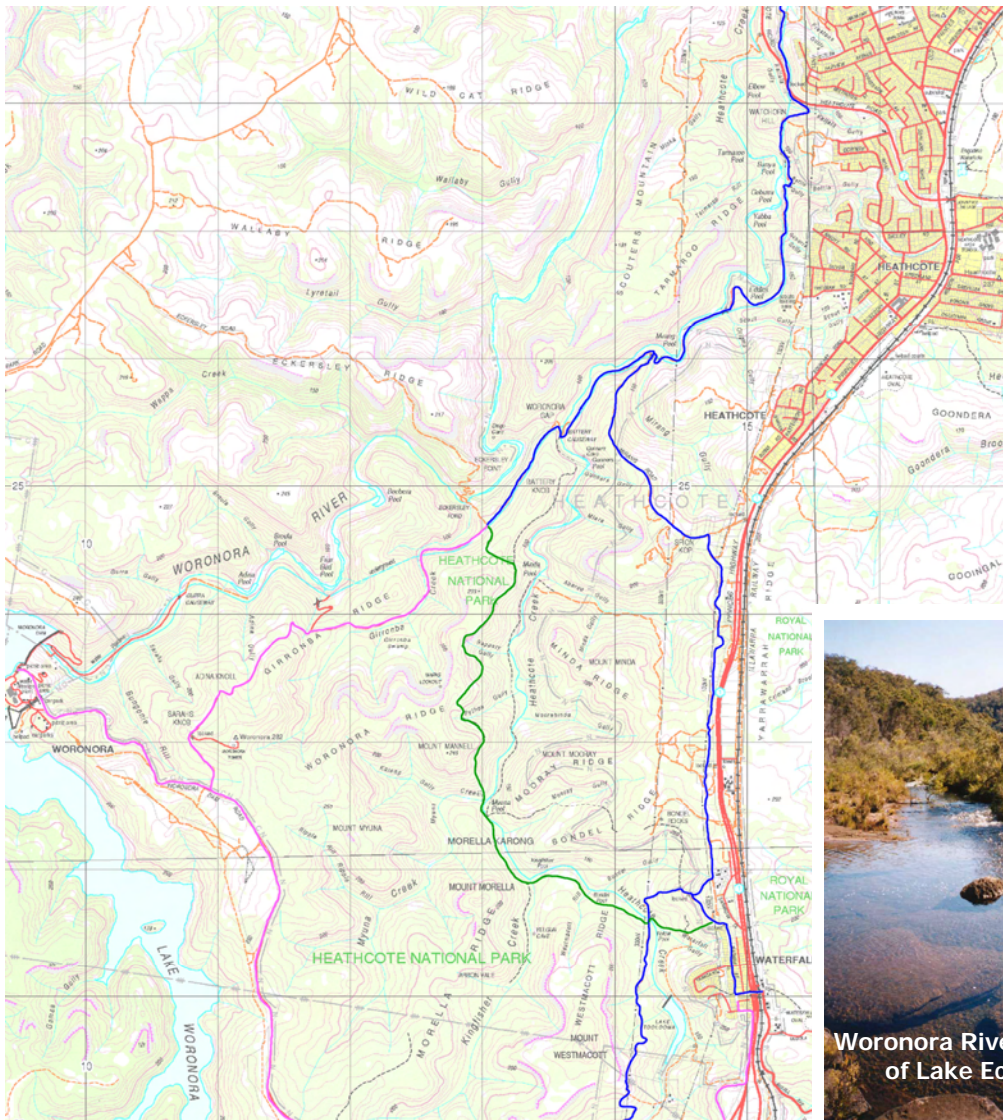
Sub section	Scouters View	W3-A8	
Start and Finish	Sabugal Gully (northern end of Woronora Rad, Engadine) to Heathcote Road		
Distance	3.7 km		
Grade	2-3	Time	2 hr Ped. 0.5hr Cycle
Main Features	<ul style="list-style-type: none"> ▪ Elevated views of upper river ▪ Sandstone gully forest ▪ Ridgetop open forest ▪ Woronora Dam Pipeline 		
Description	Good quality sandstone surfaced 3M wide track		
Facilities	None		
Opportunities and Constraints	<ul style="list-style-type: none"> ▪ Look outs over steep sided valley ▪ Interpretation of Journey of Drinking Water ▪ Where creeklines cross replace concrete culverts with natural materials/plants – Education Opportunity ▪ Clear up accumulated dumping 		
Current Status	<ul style="list-style-type: none"> ▪ Sydney Water Board Easement - no official access. ▪ Crown Land (SSC managed) zoned 7(b) and 6(a) ▪ Small section managed by NPWS 		
Actions Required	<ul style="list-style-type: none"> ▪ Formalise agreement with Sydney Water/NPWS ▪ Clarify junction of tracks in Sabugal Gully ▪ 2 x Sign 2, 1 x Sign 3 ▪ 1 x Sign 1 at Woronora Rd Sabugal Gully ACP ▪ 4 Waymarker Posts 		
Priority	B		
Estimated Cost	10K		
Community	Engadine Bushcare Groups, Ferntree Reserve Bushcare Group, Engadine West Public School, Boys Town, St John Bosco HS, Youth Centre, Engadine Rotary Club, NPA		
Land owners/ Managers	SSC, DIPNR, Sydney Water, NPWS		

Alternative Route Investigated

The Needles to Heathcote Rd Bridge

- This reach of the river has a rugged gorge like quality, and the best way to explore it is via the river itself - swimming, canoeing or liloing.

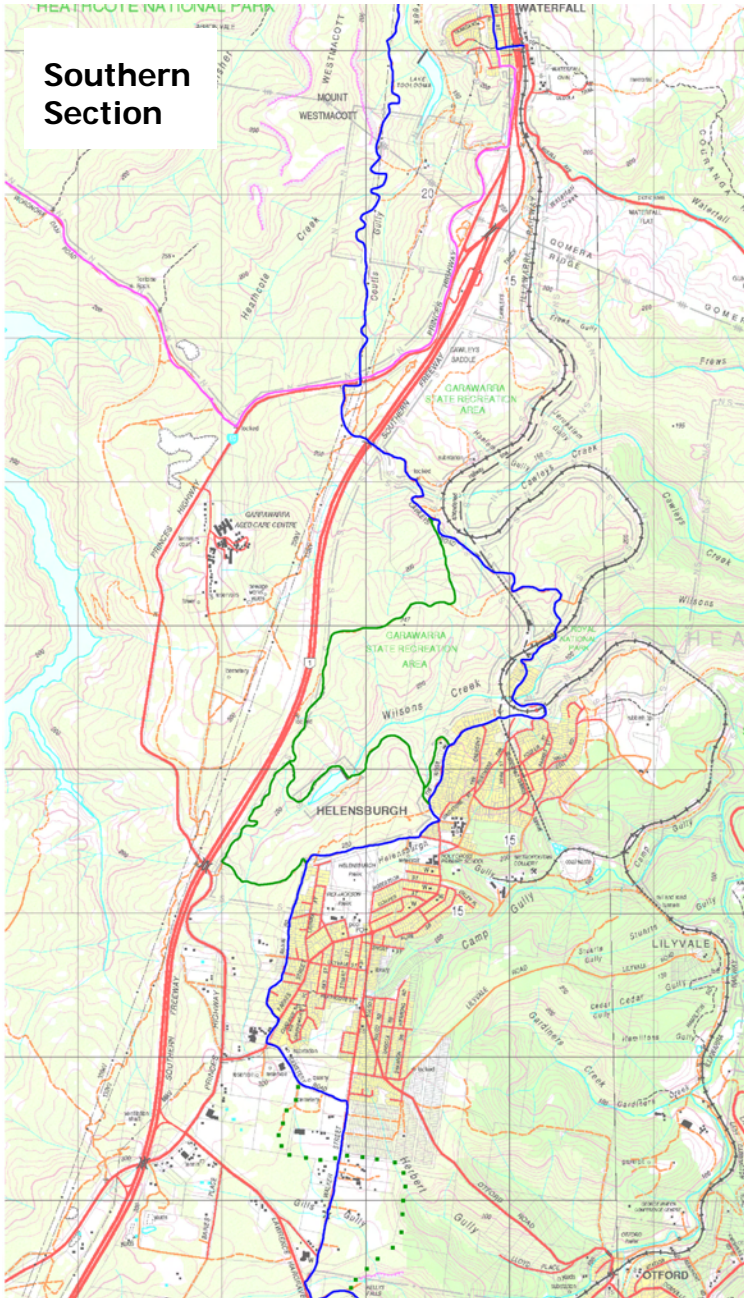
W4 – Freshwater



Woronora River upstream of Lake Eckerley



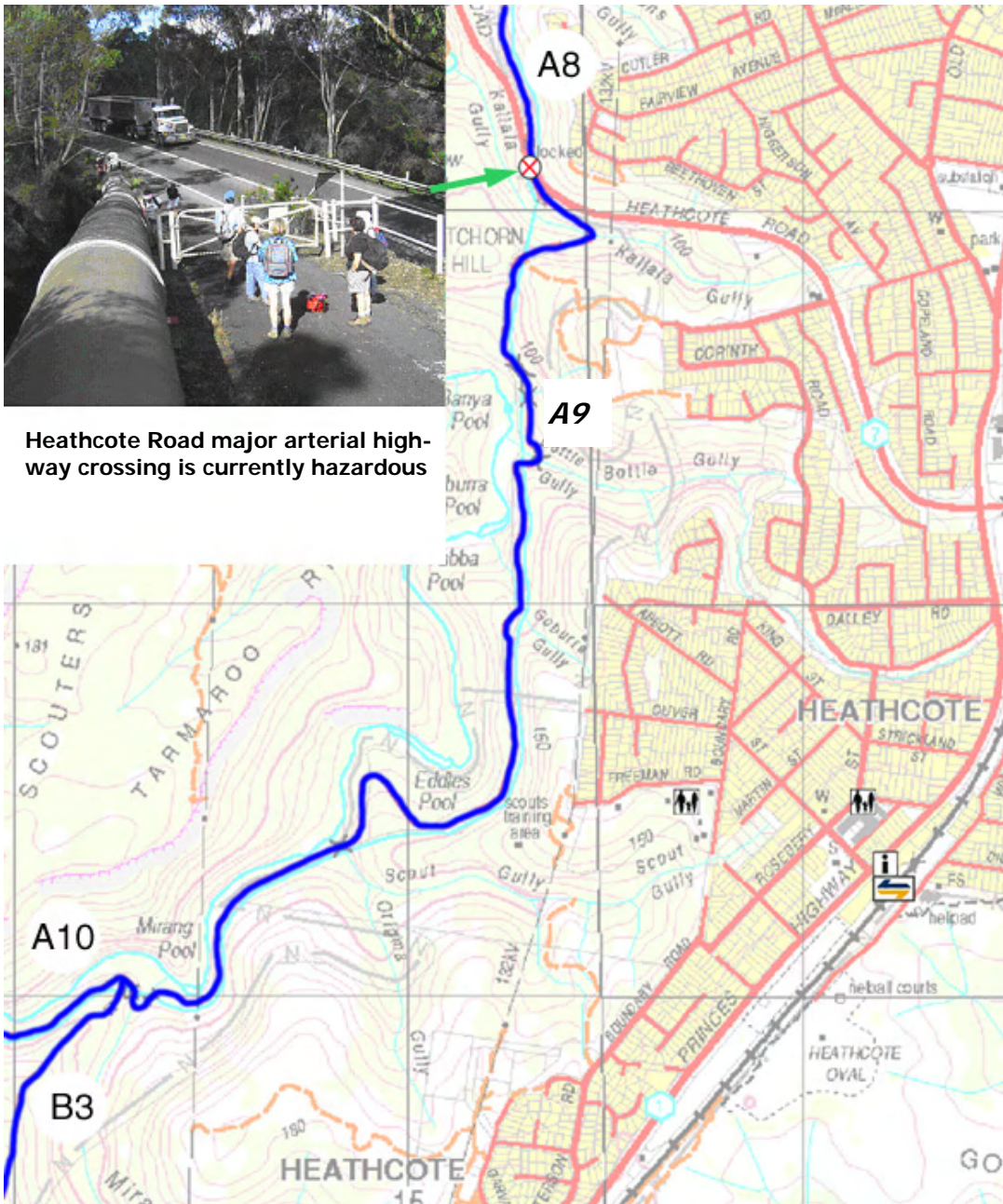
Walking the Pipeline Road near Mirang Pool in Heathcote National Park



W4-A9 Tamaroo



Heathcote Road major arterial highway crossing is currently hazardous



Rationale:

For this section of the route to be viable a safe link across Heathcote Road is vital. (photo)

Four factors contribute to the present hazardous crossing situation:

1. speed of vehicles - speed limit is 90 km/h
2. speed is exacerbated by the steep downslope on the Heathcote National Park side of the road
3. heavy volume of heavy traffic
4. crossing point is on a bend in the road, limiting the time to see approaching vehicles and for them to see pedestrians

The preferred option is to construct a purpose built pedestrian bridge across the carriageway. Because of the nature of the terrain a long flight of steps is necessary on the Heathcote National Park side. This will inconvenience but should not deter cyclists from using the bridge.

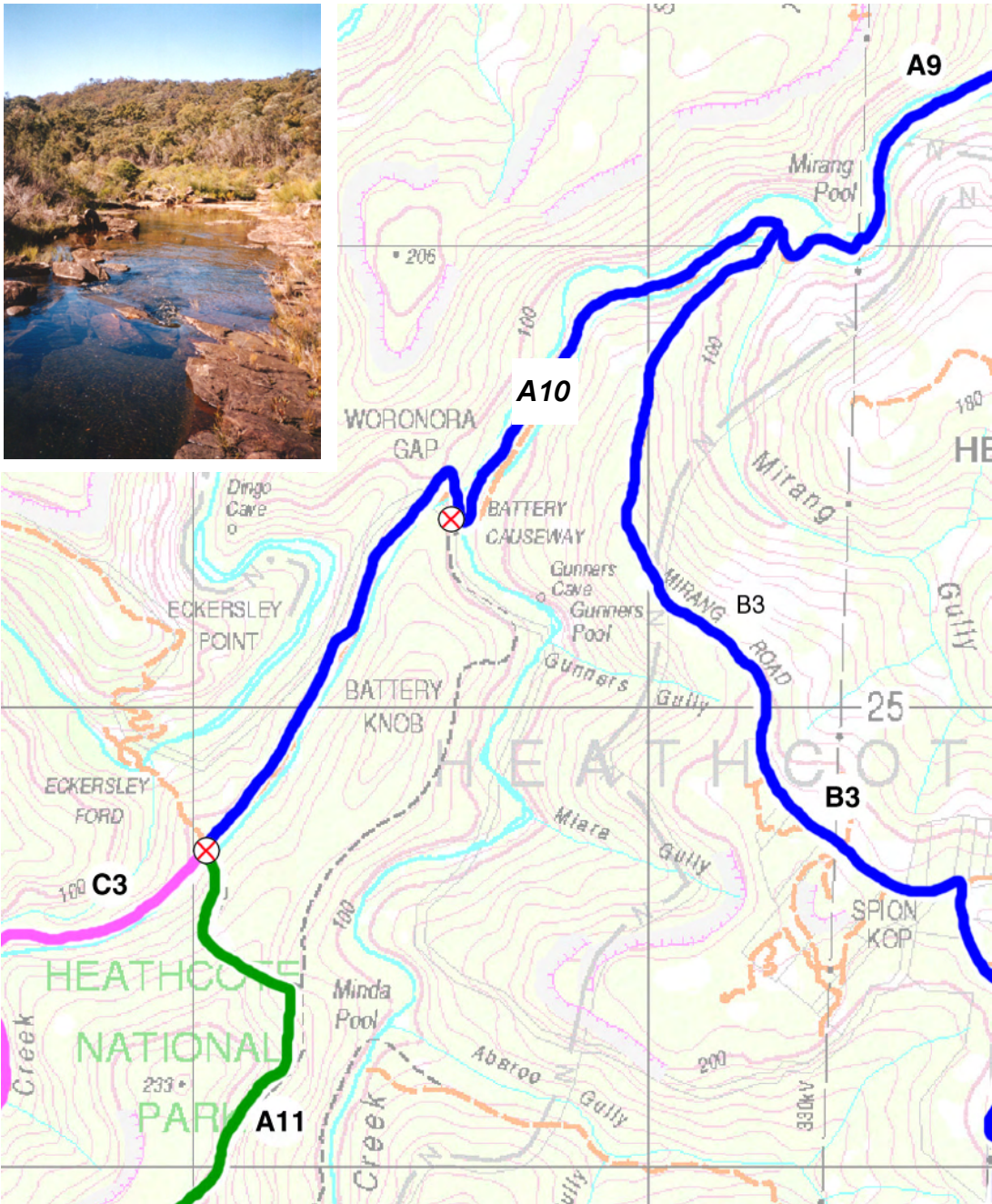
WORONORA WAY
FRESHWATER

SHARED USE ROUTE

Sub section	Tamaroo	W4-A9	
Start and Finish	Heathcote Road to Mirang Road Junction		
Distance	2.6 km		
Grade	3	Time	1.5 hr Ped. 0.5 hr Cycle
Main Features	<ul style="list-style-type: none"> ▪ Heathcote Creek ▪ Scouters Mountain view ▪ Goburra Pool ▪ Mirang Pool 		
Description	Attractive meandering route following contour above Heathcote Creek. Sweeping views of rugged Tamaroo Ridge and Scouters Mountain. Sealed surface (tarmac in places) of mainly decomposed granite.		
Facilities	Camping Ground Close to Heathcote Settlement (see W6??) Picnic table at Mirang Rd junction.		
Opportunities and Constraints	<ul style="list-style-type: none"> ▪ Key point of non-motorised access to Heathcote NP ▪ Dangerous Road Crossing – 100km/hr traffic, poor visibility ▪ Interpretation of Journey of Drinking Water ▪ Biodiversity and Cultural Education Opportunities 		
Current Status	Heathcote National Park – Sydney Water Easement Access for walkers and cyclists		
Actions Required	<ul style="list-style-type: none"> ▪ SSC/RTA/NPWS/NPA Plan, design and construct pedestrian bridge over Heathcote Rd ▪ Formalise agreement with Sydney Water and NPWS ▪ Amend Heathcote NP POM to include GWK ▪ Information and Safety Sign to complement NP entry sign (sign type 2) ▪ 3 marker posts (sign type 4) 		
Priority	B		
Estimated Cost	300K		
Community	NPA, Heathcote Settlement, J. Harold Kaye Scout Centre, Heathcote Progress Association, Sutherland Shire Bush Walking Club		
Land owners/ Managers	NPWS, Sydney Water, NPA, SSC, DIPNR, SSCMB		

The Pipeline Track in the National Park is open to public use for both walkers and cyclists, and is generally a good quality surface, either bitumen or decomposed granite. Long term maintenance of the track corridor is carried out by National Parks, with Sydney Water responsible for the repair of specific structures such as bridges. There are good views of the National Park and the pools in Heathcote Creek. The wild, rugged nature of the park can be appreciated as well as marvelling at some of the engineering feats accomplished to provide Woronora Dam Pipeline.

W4-A10 Lake Eckersley



WORONORA WAY
FRESHWATER

SHARED USE ROUTE

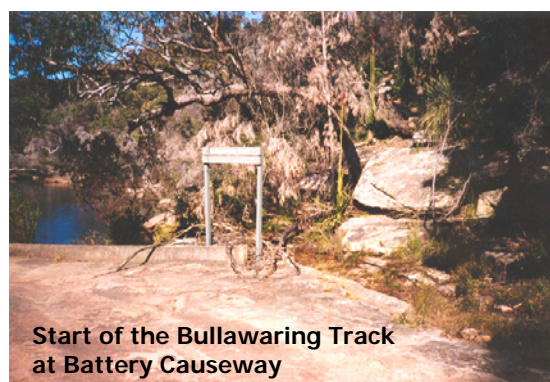
Sub section	Lake Eckersley	W4-A10	
Start and Finish	Mirang Road Junction to Eckersley Ford Crossroads		
Distance	1.8 km		
Grade	2	Time	1 hr Ped. 0.25 hr Cycle
Main Features	<ul style="list-style-type: none"> ▪ Battery Causeway ▪ Lake Eckersley (a detour) ▪ Views of Eckersley Ridge 		
Description	Bitumen surface and quality sandstone surfaced 3M wide track		
Facilities	Camping Ground at Lake Eckersley		
Opportunities and Constraints	<ul style="list-style-type: none"> ▪ Interpretation of Journey of Drinking Water on publicity materials ▪ Biodiversity, Cultural and Historical Education Opportunities ▪ Prevent cycle access to Bullawaring and Eckersley Ford tracks – walking-only signs, sympathetically designed bike racks at Battery Causeway. 		
Current Status	Heathcote National Park – Sydney Water Board Easement Shared access for walking and cycling		
Actions Required	<ul style="list-style-type: none"> ▪ Formalise agreement with Sydney Water and NPWS ▪ Amend Heathcote NP POM to include GKW ▪ 1 x information/waymarker sign at junction of Pipeline Road and Goanna track 		
Priority	C		
Estimated Cost	\$500		
Community	NPA		
Land owners/Managers	NPWS, Sydney Water		

Rationale:

The Pipeline Trail acts as a spine trail, linking other tracks in the Park. For example at Mirang Pool a sealed road heads south as an alternative shared route to Waterfall (see section W4-B4).

At Eckersley Crossroads an old road route leads to a Ford across the Woronora River where once a Post Office served a small community of several orchard owners up until 1930.

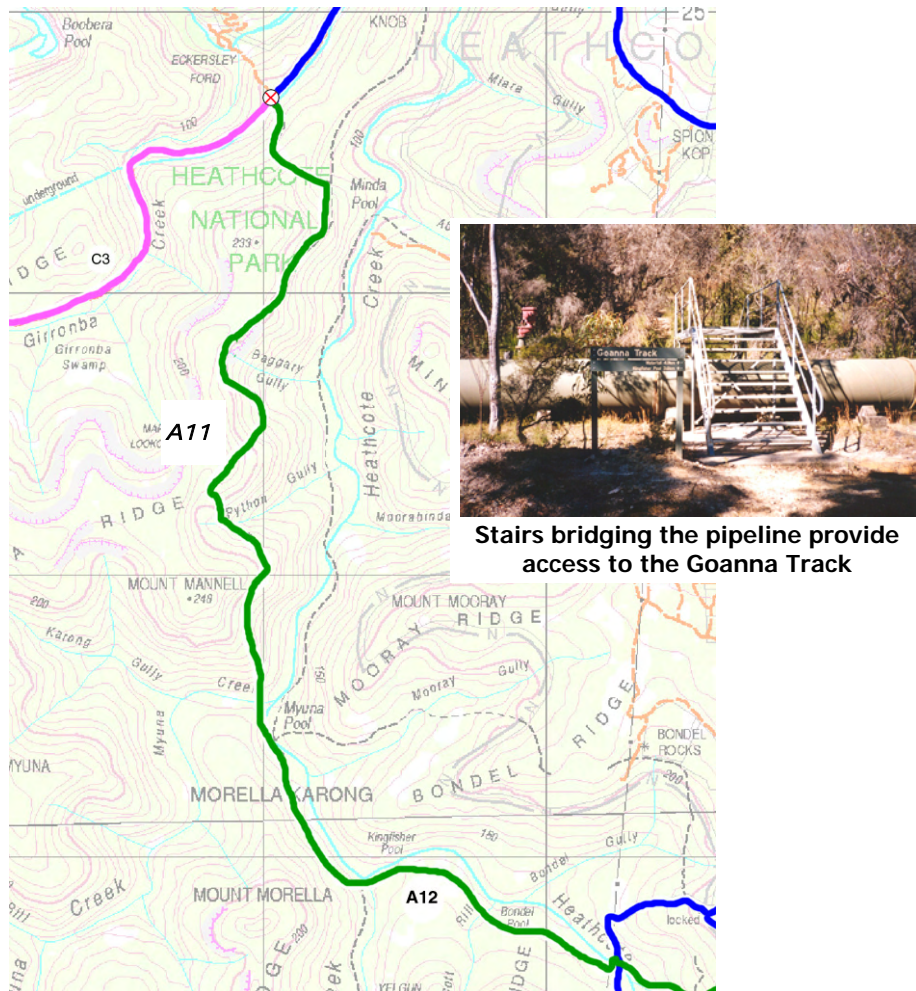
At Battery Causeway is the northern access point for the Bullawaring track. A key management challenge is to prevent illegal access and subsequent damage by cyclists to this walk track.



Start of the Bullawaring Track at Battery Causeway

W4-A11 Goanna Track and Bullawaring Track (N)

Walking Track Option to Waterfall



Stairs bridging the pipeline provide access to the Goanna Track

Rationale:

Sections W4-A11 and W4-A12 comprise the Bullawaring Track.

This designated National Park walking track provides an attractive and fairly direct route to Waterfall and connections to the railway network.

An important management issue to address is how to prevent cyclists accessing this track from the pipeline trail, where the suggested routes for walkers and cyclists diverge. The problem is of particular concern to bushwalking groups who see increased mountain bike usage further eroding the wilderness qualities of the Park.

The Royal National Park has tried to address similar concerns with a Trail Cycling Management Plan. Mountain bike riders in particular are a very diverse group, with ranging levels of skills and the degree of 'challenge' desired from the trail.

Consultation by NPWS with the mountain bike community has indicated that the two ends of the spectrum range from recreational cyclists, who ride predominantly on management trails (and generally appreciate conservation and NPWS management ideals), to the adventure or 'Soul' rider who seeks out areas that provide excitement, technical challenge and/or remote area access. Most bikers preferred circuit or loop routes to linear routes.

WORONORA WAY
FRESHWATER

PEDESTRIAN ROUTE

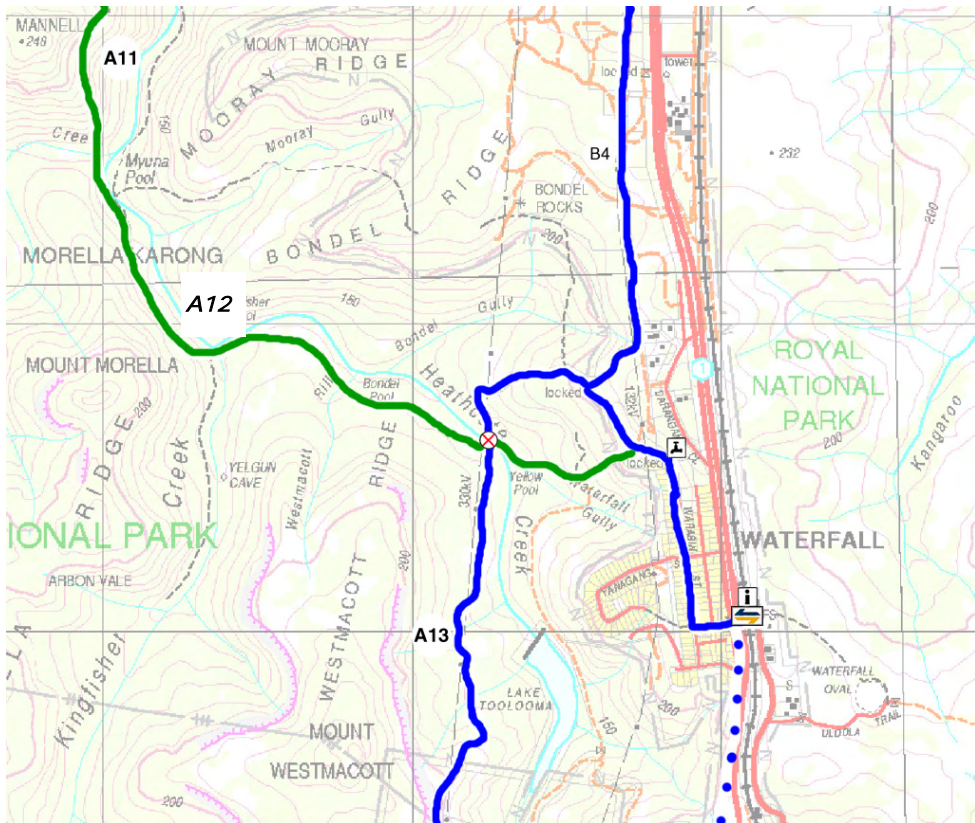
Sub section	Goanna Track and Bullawaring Track (N)	W4-A11	
Start and Finish	Eckersley Ford Crossroads to Myuna Pool		
Distance	2.8km		
Grade	2-4	Time	2 hr
Main Features	<ul style="list-style-type: none"> ▪ Marks Lookout - 360 degree views (incl. Eckersley Ridge, Holsworthy military land and Yarrowarra Ridge) ▪ Myuna Pool ▪ Links to Mooray Track Views of and the to North West 		
Description	NPWS-managed walking track, recently refurbished with new signs (Winter 2003), bare sandstone, loosely defined in places, steep gully sections.		
Facilities	Camp Ground		
Opportunities and Constraints	<ul style="list-style-type: none"> ▪ Preventing Cycle Access from Pipeline Road ▪ Clarify signage at junction of Goanna and Bullawaring Tracks ▪ Sensitive Plant Communities ▪ Biodiversity and Cultural Education Opportunities ▪ Views over hills to the east 		
Current Status	Heathcote National Park – designated walking track		
Actions Required	Amend Heathcote NP POM to include GKW 5 x waymarker signs		
Priority	B		
Estimated Cost	\$500		
Community	NPA		
Land owners/ Managers	NPWS		

The two ends of the spectrum therefore impact the environment in different ways. The recreational cyclists (75%) have minimal impact on the park as they usually ride on approved management trails constructed for vehicle use. Adventure cyclists (25%) will generally avoid management trails labelling them as uninteresting and will instead ride on single lane walking tracks, steep downhill sections and rocky outcrops. These tracks are the most susceptible to environmental damage and track widening, especially after rain.



View south east over Mount Mooray from Bullawaring Track

W4-A12 Bullawaring Track South



Junction of Bullawaring & Mooray Tracks near Mvuna Pool

Most adventure cyclists arrive in the Park by motor vehicle. The Royal has extensive public road access to the start of trails and track heads, whereas there is no public road access in Heathcote National Park.

The Woronora Way shared use section utilises a linear management road and as such is much more attractive to individual recreational cyclists and families than to the adventure cyclists.

However, measures should be put in place to ensure that cycling is kept to the Dam Road at all times.



Heathcote Creek

WORONORA WAY
FRESHWATER

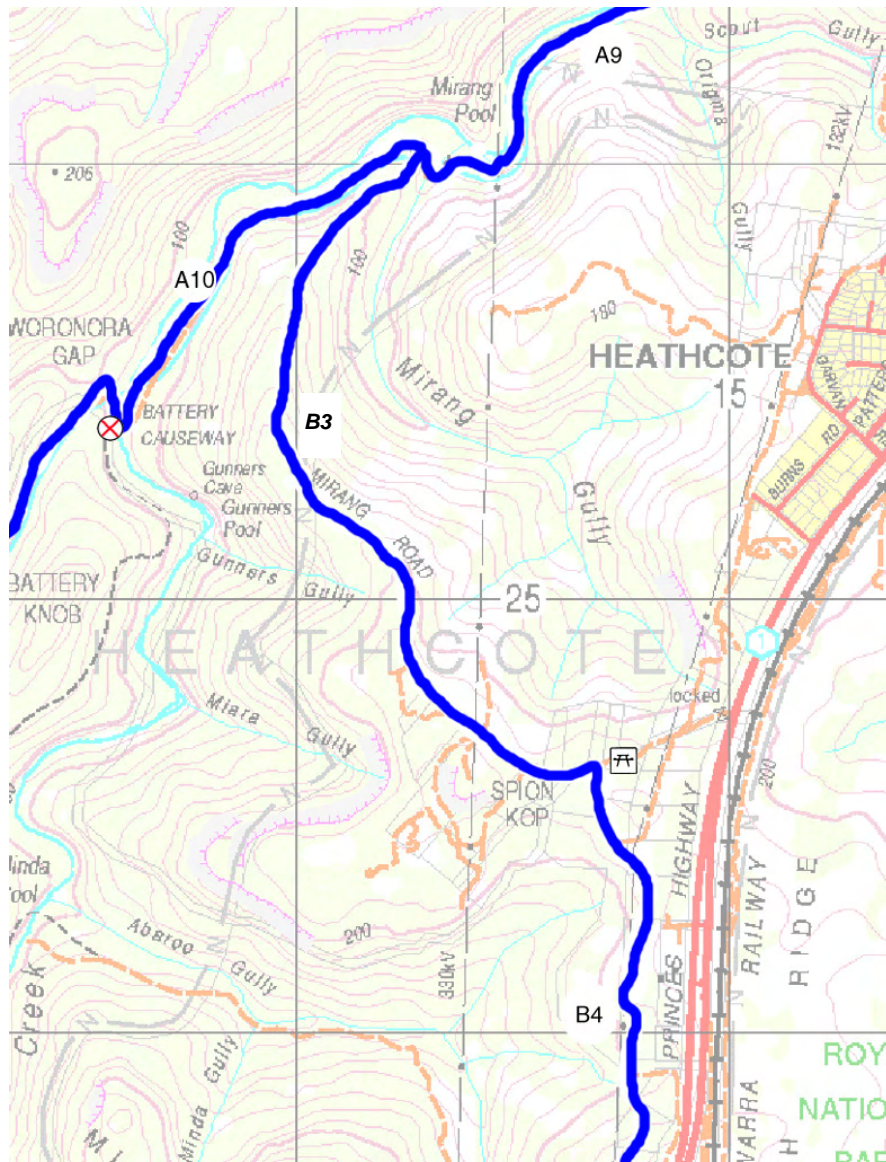
PEDESTRIAN ROUTE

Sub section	Bullawaring Track (S)	W4 – A12	
Start and Finish	Myuna Pool to Waterfall Station		
Distance	3km		
Grade	2-3	Time	2 hr
Main Features	<ul style="list-style-type: none"> ▪ Kingfisher Pool ▪ Bondel Pool ▪ Waterfall/cascade ▪ Yellow Pool ▪ Heathcote Creek 		
Description	Bare sandstone, loosely defined in places		
Facilities	Camping Ground, eco-toilet, Shop, Church, Scout Camp		
Opportunities and Constraints	<ul style="list-style-type: none"> ● Preventing Cycle Access from Fire Trail 108 ● Biodiversity and Cultural Education Opportunities ● Sensitive Plant Communities/Threatened Species 		
Current Status	Heathcote National Park – designated walking track		
Actions Required	<ul style="list-style-type: none"> ● Amend Heathcote NP POM to include GWK ● 4 x waymarker posts (sign type 4) 		
Priority	B		
Estimated Cost	\$400		
Community	NPA, Sutherland Shire Bushwalking Club, Waterfall		
Land owners/ Managers	NPWS, DIPNR		

Clear signage explaining the reasons why cyclists are prohibited from the Bullawaring Track, and an sympathetically designed bike parking stand are two measures which might help solve the problem of inappropriate access on to the track.

Mirang Road Fire Trail and the management trail along the Yarrowarra Ridge form a potential alternative shared route (see routes W4-B3, W4-B4) to Waterfall.

W4-B3 Mirang Road



Panorama southwest across
Heathcote National Park from Mirang Road

WORONORA WAY
FRESHWATER

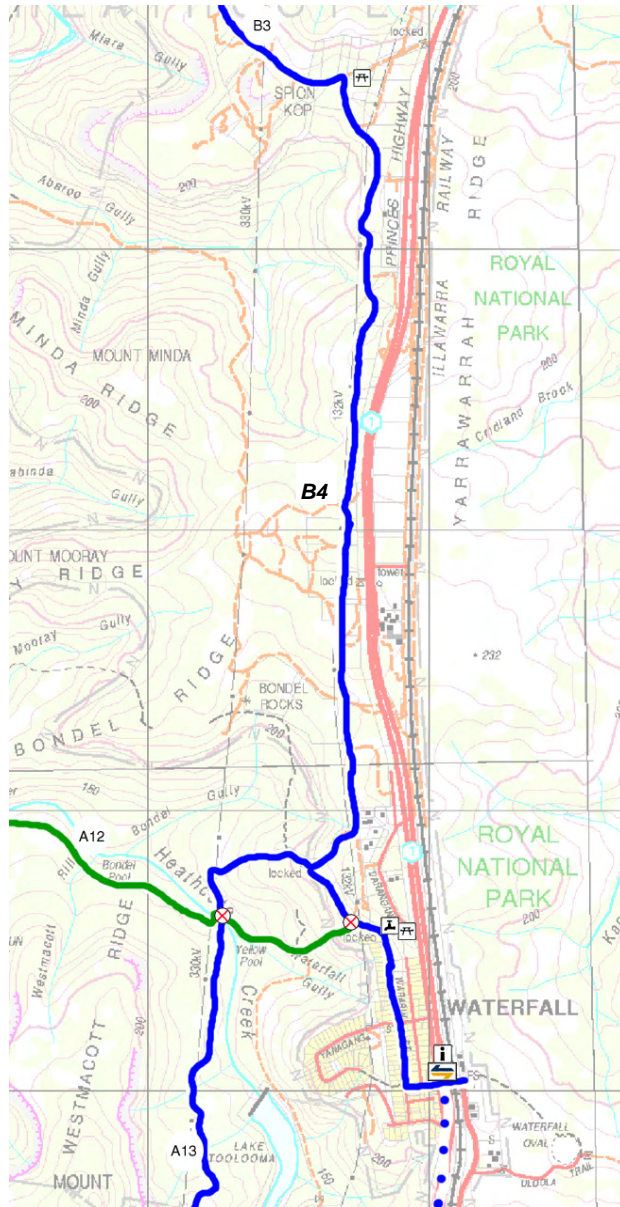
SHARED ROUTE

Sub section	Mirang Road	W4 – B3 (Alternative Route to Waterfall)	
Start and Finish	Mirang Road Junction to Spion Kop		
Distance	1.8 km		
Grade	3	Time	1 hr
Main Features	3m wide management trail with fine views across NP		
Description	Bitumen surface		
Facilities	None		
Opportunities and Constraints	<ul style="list-style-type: none"> ● Lookout over hills to the south west ● Historical and Geographical Education Opportunities ● Shared Use Potential ● Evidence of dumping, burnt out cars, severe weed infestation from soil tipping ● Opportunity to increase recreational benefits of new section of park 		
Current Status	Land recently gazetted as Heathcote NP extension – important continuation of greenweb, protecting link between two national parks.		
Actions Required	<ul style="list-style-type: none"> ● Amend Heathcote NP POM to include GWK ● 2 x waymarker signs 		
Priority	C		
Estimated Cost	\$300		
Community	NPA, Heathcote		
Land owners/ Managers	NPWS, DIPNR, RFS, SSC		



Mirang Road Access Control Point near Mirang Pool

W4-B4 Yarrawarra Ridge



View south towards Waterfall



Abandoned vehicles alongside route B4 pose a mangement challenge

WORONORA WAY
FRESHWATER

**ALTERNATIVE
SHARED ROUTE**

Sub section	Yarrowarrah Ridge	W4 – B4	
Start and Finish	Spion Kop to Waterfall Station		
Distance	3.7 km		
Grade	2	Time	2 hr
Main features	3m wide ridge top Electricity Board Management trail		
Description	Crushed Stone		
Facilities	Shop, Railway Station		
Opportunities and Constraints	<ul style="list-style-type: none"> ▪ Lookout over hills to west ▪ Shared Use Potential ▪ Management Issues - Unsocial activities ▪ Evidence of dumping, burnt out cars, weed infestation 		
Current Status	Land recently gazetted as Heathcote NP extension		
Actions Required	<ul style="list-style-type: none"> ▪ Amend Heathcote NP POM to include GKW ▪ 4 x waymarker signs 		
Priority	C		
Estimated Cost	\$400		
Community	NPA, Heathcote/Waterfall		
Land owners/Managers	NPWS, Energy Australia, Integral Energy, DIPNR		

Rationale:

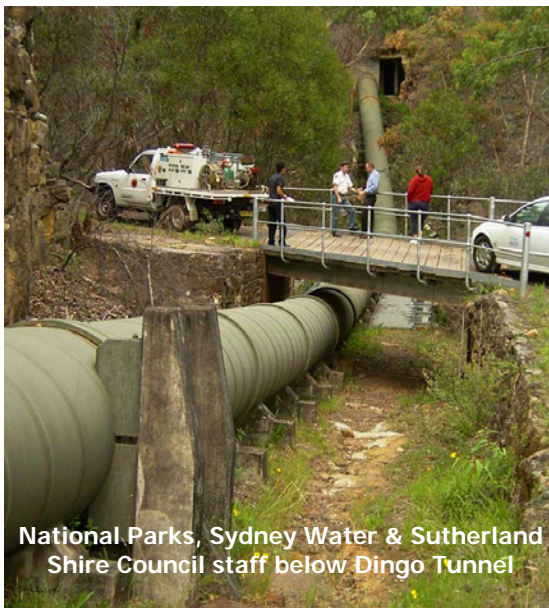
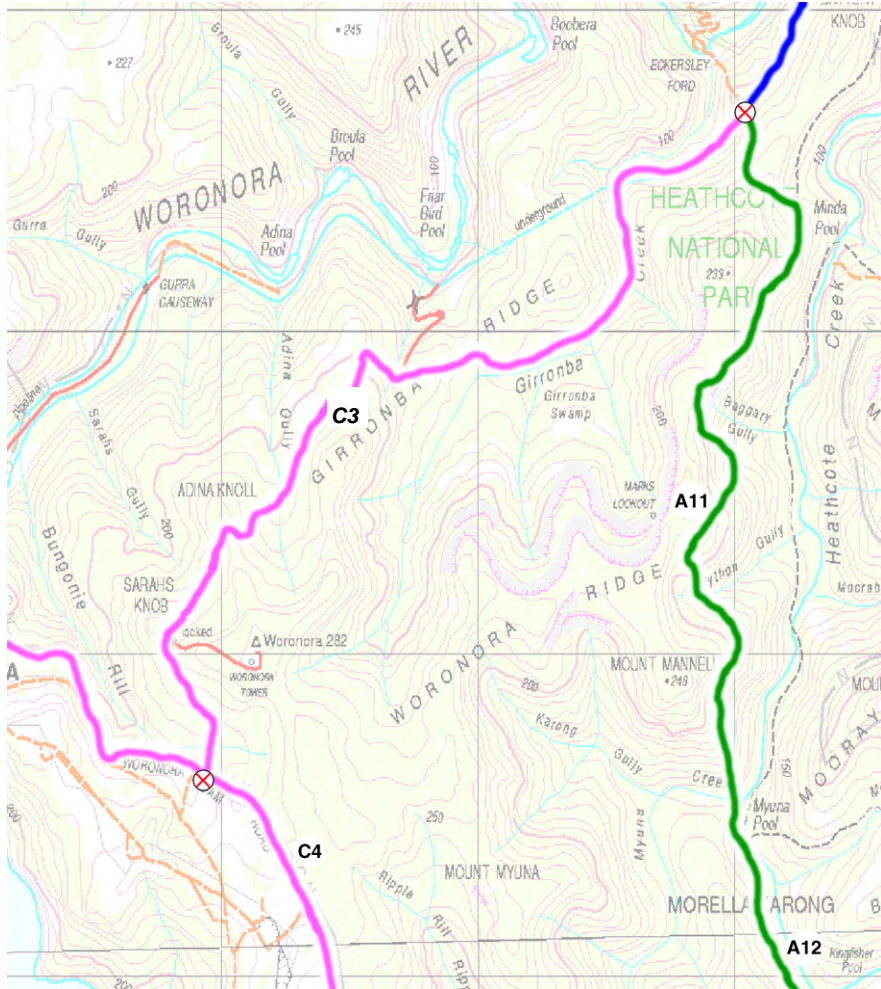
The route in sections B3 and B4 provides a more direct, shared use link between the pipeline trail and Waterfall. Fine views of the Park can be seen from the Mirang Road.

There is an opportunity to develop a partnership with Energy Australia and NPWS to upgrade sections of the route which are poorly drained and eroded. Designating it as an official route would add to recreational potential of the recently gazetted section of Heathcote National Park.

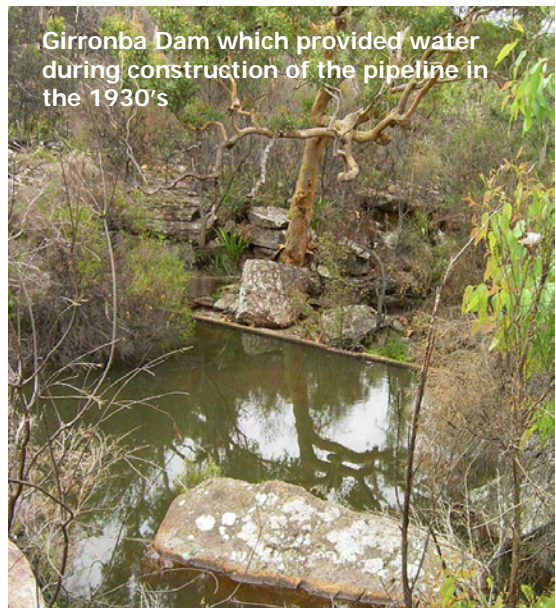
However the route takes users away from the heart of the park and its natural and cultural values. People are also further removed from the Woronora River and its main tributary Heathcote Creek. The attractiveness of Yarrowarra Ridge B3 as a route is considerably reduced, by 4 factors:

- For most of its length it utilises an Energy Australia maintenance trail, beneath overhead electric cables and supporting pylons.
- The constant noise from vehicles on Princes Highway.
- There are unresolved management issues such as illegal 4WD access, illegal dumping of hazardous materials, burning out of cars, etc.
- Despite running close to the ridge top, there are few opportunities for views across the Park and the track is enclosed by vegetation on both sides

W4-C3 Girronba



National Parks, Sydney Water & Sutherland Shire Council staff below Dingo Tunnel



Girronba Dam which provided water during construction of the pipeline in the 1930's

WORONORA WAY
FRESHWATER

CYCLING ROUTE

Sub section	Girronba	W4 – C3	
Start and Finish	Eckersley Junction to Dam Road		
Distance	4 km		
Grade	2	Time	1 hr
Main Features	Girronba Dam Historical Dingo tunnel (Pipeline) Views of Woronora Dam		
Description	Bitumen surface, ironstone or sandstone surfaced 4m wide road		
Facilities	Girronba Picnic Area		
Opportunities and Constraints	<ul style="list-style-type: none"> ● Lookout over hills to west ● Interpret Girronba and tunnel on literature ● Historical and Geographical Education Opportunities ● At junction with Dam Rd signage to prevent SCA access – extra signage ● Rare Orchids and vulnerable species - Heath Monitor ● Evidence of dumping, burnt out cars, weed infestation 		
Current Status	Sydney Water Easement managed by NPWS		
Actions Required	<ul style="list-style-type: none"> ● Amend Heathcote NP POM to include GWK ● 4 x waymarker signs 		
Priority	C		
Estimated Cost	\$400		
Community	NPA, Sutherland Shire Bushwalking Club, Sharkbike		
Land owners/ Managers	NPWS, Sydney Water, SCA		

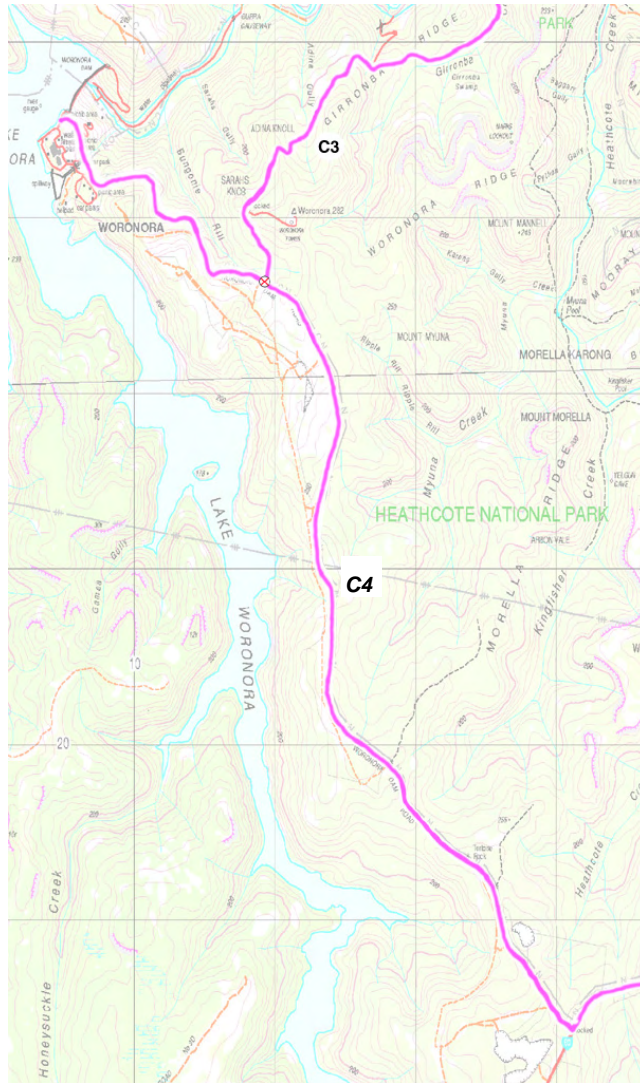
Rationale:

Cycling Route to Waterfall via Woronora Dam

The following 3 sections of the Way, W4-C3 to C5, suggest a route where cycling is permitted, continuing along the pipeline road, utilising existing management roads to access the Woronora Dam and Woronora Dam Road. At the junction with Princes Highway the Way continues east for 800m before rejoining the shared route south along Cawleys Road to Helensburgh (refer to W4-A13)

Although the route is used by walkers to connect to bush tracks, there are risks in using the Dam Road because of its narrow width and the presence of heavy vehicles accessing the Dam. For these reasons it has not been chosen as a walking route for the Way.

W4-C4 Woronora Dam Road



Visitors enjoy the recreation facilities at Woronora Dam

WORONORA WAY
FRESHWATER

CYCLING ROUTE

Sub section	Woronora Dam Road	W4 – C4	
Start and Finish	Dam Road Junction to Princes Highway (Dam Spur)		
Distance	5.2 km (8.8 km including round trip to Dam)		
Grade	2	Time	1 hr
Main Features	Sealed surface service Road overlooking Woronora dam		
Description	Good condition		
Facilities	Picnic grounds, Toilets at Dam		
Opportunities and Constraints	<ul style="list-style-type: none"> ▪ Interpretation of Journey of Drinking Water ▪ Sydney Catchment Authority have concerns with bike use on road because of lack of shoulder ▪ Potential for inappropriate access to protected catchment lands 		
Current Status	Sydney Water Corporation own road between land under care and control of NPWS and SCA		
Actions Required	<ul style="list-style-type: none"> ▪ Amend Heathcote NP POM to include GWK ▪ Extra penalty notices along a SCA special area boundary ▪ 2 x waymarker signs 		
Priority	C		
Estimated Cost	\$200		
Community	NPA, Sharkbike		
Land owners/Managers	NPWS, Sydney Catchment Authority, Sydney Water		



Endangered Species of Orchid (*Thelmytra ixiodes*)

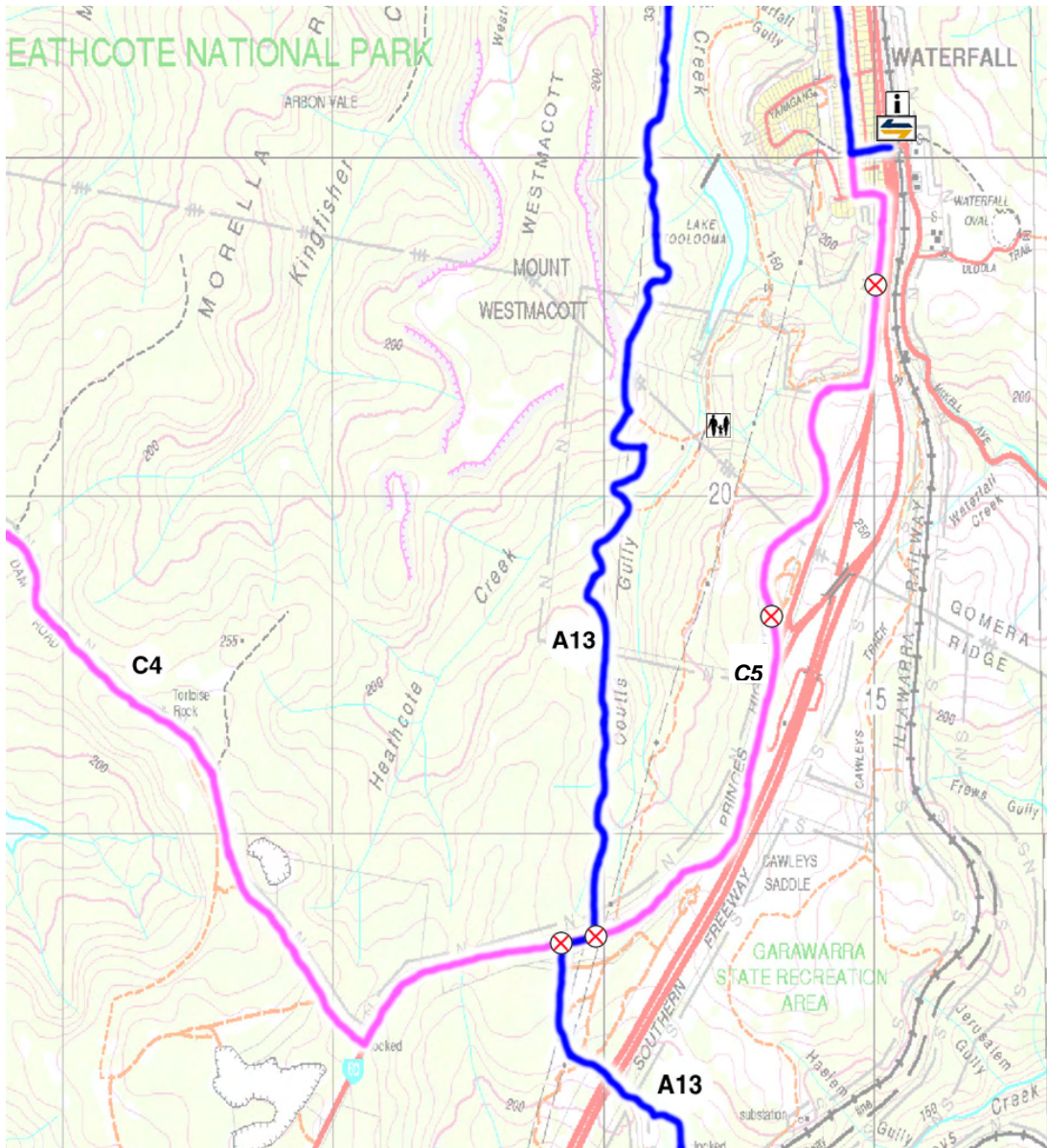


Woronora Dam Road



"Rosenberg's Goanna" near the Woronora Dam Road

W4-C5 Princes



Access Point on Princes Highway for Heathcote N.P. via fire trail 108



Freeway turnoff to Waterfall shoulder lane marked for cycles

WORONORA WAY
FRESHWATER

CYCLING ROUTE

Sub section	Princes	W4 – C5	
Start and Finish	Princes Highway to Waterfall station		
Distance	4 km		
Grade	2	Time	1 hr
Main Features	Main Road with fine views across catchment lands and Heathcote NP		
Description	Good condition		
Facilities	Waterfall - Café/Shop, Cityrail		
Opportunities and Constraints	Safety Concerns for less experienced cyclists - shoulder only intermittent.		
Current Status	RTA land		
Actions Required	<ul style="list-style-type: none"> ▪ Amend Heathcote NP POM to include GKW ▪ RTA to provide road shoulder along the length of the road ▪ 2 x waymarker signs 		
Priority	C		
Estimated Cost	\$200		
Community	NPA, Sharkbike, BicycleNSWHeathcote/Waterfall		
Land owners/Managers	SCA, Sydney Water, NPWS, RTA		

Rationale for Sections W4-C3 to C5:

From Eckersley Ford Junction, The Sydney Water Pipeline Trail offers a virtually traffic free route as far as the junction with Woronora Dam Road.

Historic features related to the construction of the Dam are evident along the route, including the Dingo Tunnel through which the pipeline disappears, and picturesque Girronba Dam, which supplied water during construction as well as a swimming hole. There is an opportunity to tell the story of the area at the picnic grounds close by.

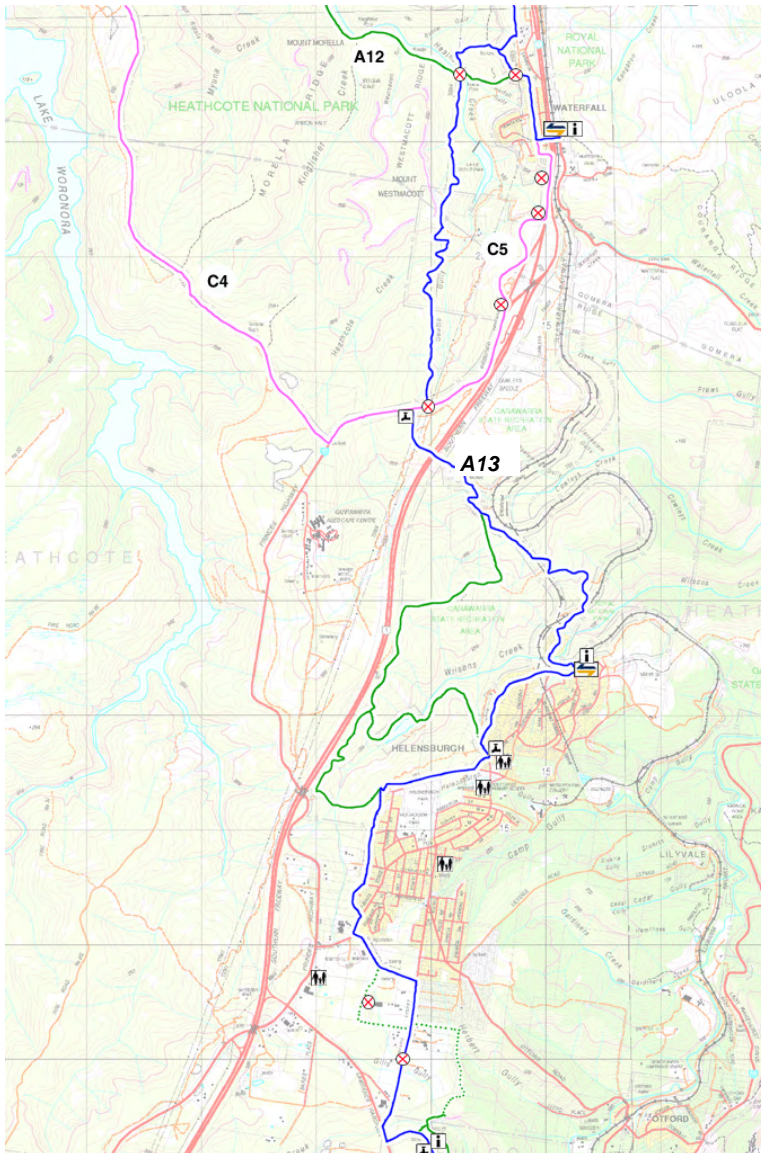
At Sarahs Knob views can be seen of the Dam Wall and the body of water behind. The Dam visitor centre provides an interesting detour from the spine route.

Sydney Catchment Authority have raised the issue of safety for cyclists using the Dam Road from the Dam to Princes Highway W4-C5 and W4-C6. Two solutions are suggested:

- Traffic calming measures to reduce vehicle speeds along the road; and
- Provision of a shoulder with white cycle markings to one side of the road. The shoulder option is complicated by the presence of rare orchids in the roadside verges, which are protected under the provisions of the Threatened Species and Conservation Act.

The provision of a marked shoulder for cyclists along Princes Highway between the Dam road turn off and the freeway would be desirable. The freeway has a cycle lane marked which turns off to Waterfall. The driver training centre road provides a potential alternative route for 1km just before Waterfall.

W4-A13 Helensburgh Link



Cawleys Road from Princes Highway to Helensburgh Station - traffic free sealed surface the majority of the route – ideal for cycling



Walker St from Helensburgh to Kellys Falls – no shoulder for 800 m on an 80 km/h speed limit road

Rationale:

In order to avoid crossing the Special Area lands managed by Sydney Catchment Authority at the head of the Woronora, and to avoid using Princes Highway, the route detours into the Hacking River catchment.

Fire Trail 108 follows a utility easement through the southern section of Heathcote National Park offering sweeping views of Lake Toolooma and Waterfall. Cyclists taking the Woronora Dam Road option (W4-C4) can rejoin the Way at the junction of Princes Highway and Cawleys Road, or carry on along Princes Highway to Waterfall (W4-C5).

Cawleys Road provides a traffic free shared route through the undulating topography of Garrawarra State Conservation Area as far as Helensburgh, although initially the route is blighted by refuse dumping and evidence of burnouts. A walking only alternative route is identified, using existing management and walking tracks to explore Garrawarra SCA, including Wilsons Creek and Dam.

Around Helensburgh the options are limited by private land ownership constraints, and a lack of existing off-road routes. It is recommended that a walking route alternative to Walker Street be pursued - either on the west side requiring land owner consent/compensation; or the east side, where NPWS may acquire land.